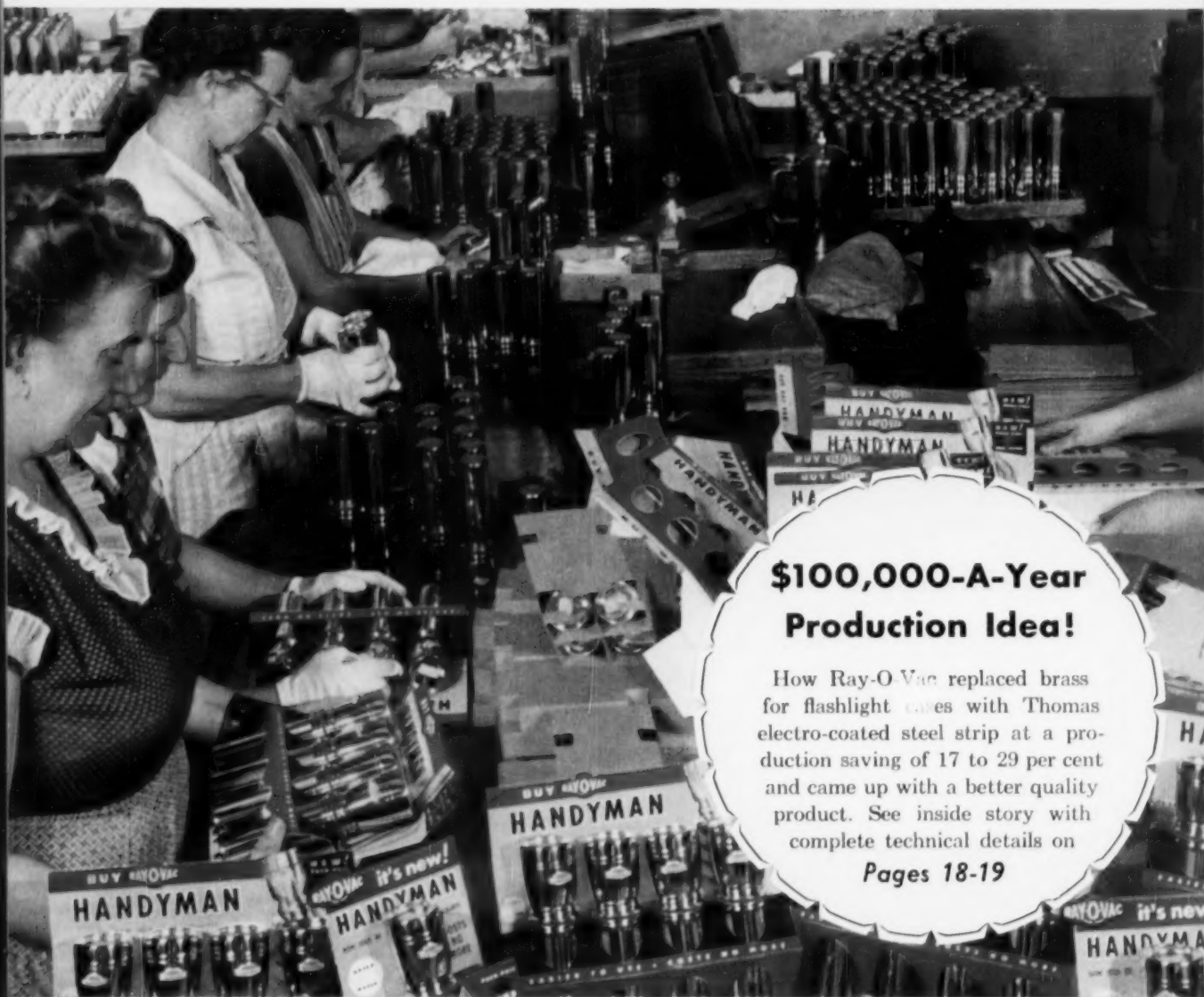


# *The* **Iron Age**

*A Chilton Publication*

THE NATIONAL METALWORKING WEEKLY • APRIL 28, 1955

How would  
the Guaranteed  
Annual Wage  
affect you?  
See page 55



## **\$100,000-A-Year Production Idea!**

How Ray-O Vac replaced brass for flashlight cases with Thomas electro-coated steel strip at a production saving of 17 to 29 per cent and came up with a better quality product. See inside story with complete technical details on

**Pages 18-19**

"Everything New ...  
But The Name"

# Thomas Strip®



**Thomas Strip Division**  
Pittsburgh Steel Company • Warren, Ohio

# Yes

## Leaded Steels Can Be Forged

This is our answer based on experience with many producers of forgings who have used leaded steels. Ledloy\* and leaded alloy steels can be heated and forged in exactly the same manner as comparable standard steels.

No modifications in forging practices have been necessary is the report from users of leaded steels.

Leaded alloy steels and leaded carbon steels for forging are available in all standard or S. A. E. compositions and in any of our standard sections. Write today for complete information about application of leaded steels to your forged product.

\*Inland Ledloy License



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117 Liberty Street New York, New York	325 W. 17th Street Los Angeles 15, Calif.	1807 Elmwood Avenue Buffalo, New York	625 James Street Syracuse, New York
711 Prudential Building Houston 25, Texas	First National Bank Bldg. Jamestown, New York	7251 General Motors Bldg. Detroit, Michigan	3102 Smith Tower Seattle, Washington

For export—Copperweld Steel International Company, 117 Liberty Street, New York



#### Are leaded steel forgings readily machinable?

Yes, the use of leaded steel forgings will result in the same improved machinability as is obtained in leaded steel bars.



#### Loss of lead due to heating?

Investigation has shown that the exudation of lead upon heating leaded steels is confined primarily to the scale. The lead content in the forging proper remains virtually intact.



#### Does lead affect mechanical properties?

No, the addition of lead does not materially affect the mechanical properties of forging.



#### Is there a health hazard?

Not generally. With ventilation normally required in forge shops, the use of leaded steels does not present a hazard.



Livelier

than a

cricket



# because it's carefully "patented"

Silver Star is a special-purpose spring wire that's engineered for a variety of upholstery applications. It coils and knots beautifully because it's so amazingly uniform in its properties and so true to gage.

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We'd be happy to ship you a trial lot of Silver Star in the gage and temper you specify. And after you've given it a full test in your own plant, be prepared to discover that it's as good as — or most likely, that it's better than — any you've used before!

And we wouldn't be surprised if you asked us to begin shipping Silver Star to you regularly. (It's happened that way before.) For full details just phone or write the nearest Bethlehem Steel sales office.



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BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



Starred items are digested at the right

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Copyright 1955, by Chilton Co. (Inc.)

THE IRON AGE, published every Thursday, with an additional issue in June, by CHILTON CO. (INC.), Chestnut & 56th Sts., Philadelphia 30, Pa. Entered as second class matter, Nov. 8, 1933, at the Post Office at Philadelphia under the act of March 3, 1879. Price to the metalworking industries only, or to people actively engaged therein, \$5 for 1 year, \$8 for 5 years in the United States, its territories and Canada. All others \$15 for 1 year; other Western Hemisphere countries, \$18; other Foreign Countries, \$25 per year. Single copies, 50¢. Annual Review Issue, \$2.00. Cable: "Ironage," N. Y.

Address mail to 100 E. 42 St., N. Y. 17, N. Y.

### NEWS DEVELOPMENTS

#### MODIFIED GUARANTEED WAGE ON THE WAY — P. 55

Detroit talks on guaranteed annual wage will cast the die for all industry. Observers forecasting that GAW in modified form will emerge. Industry urged to consider means of leveling out peaks and valleys. Effect on business is discussed. Financing will be a problem but some precedents are cited.

#### FIRST SHIPMENT OPENS MAJOR QUARRY PORT—P. 58

Shipment of a cargo of dolomite limestone marked the opening of Port Dolomite, a new Great Lakes facility serving the equally new Cedarville quarry. The quarry-port team has a capacity of 3 million tons yearly, is equipped for full processing.

#### CITIES COMPETE FOR FUTURE UET SITE — P. 62

Municipalities offer United Engineering Trustees free sites, cash for research, other inducements. Old building in New York is long outgrown. Pittsburgh has inside track with committee recommendation and approval of one of the founding societies.

#### PITTSBURGH RECRUITS ENGINEERS EARLY — P. 63

A recent poll has shown the effectiveness of Pittsburgh's School Science Fair as a means of steering young people into engineering careers. Each year the fair awards boys cash and scholarships for technical displays. A poll of past winners showed a high percentage going into technical work. Fair is a cooperative effort.

#### FORD STARTS NEW CAR DEVELOPMENT — P. 72

Realignment of executives, creation of a new special products division indicates Ford may add fifth line. Continental will be out this year, but another is needed to bridge gap between Lincoln and Mercury.

#### DEMOCRATS HATCH NEW PROBE MISCHIEF — P. 77

Senate and House investigations of General Motors are on deck for the new political season. Probers don't really expect to find any illegal operations. Purpose is to picture the Republicans as business dominated, sell the Democrats as defenders of the little fellow.

#### U. S. TOOLS UP FOR EMERGENCY PRODUCTION—P. 83

Office of Defense Mobilization has announced plans to buy machine tools for the ship turbine industry as part of its program of bolstering weak spots in vital production areas. Further emergency insurance is derived from a pool of over 80,000 equipment items, ready to be thrown into an all-out production push.

## IN METALWORKING

### ENGINEERING & PRODUCTION

#### HEAT TREAT TO GET UNIFORM STRUCTURES — P. 95

Automated or semi-mechanized metalworking plants require "something extra" in metallurgical control; they can't bypass out-of-standard parts. Dana Corp.'s Marion Div. heat treats all incoming materials to establish uniform structures for its high-speed machining operations. Other tests are also applied.

#### CHIP CRUSHER SYSTEM RECOVERS OIL — P. 98

Completely automatic, a new chip disposal system takes chips through a turbine-type crusher, extracts the oil, then speeds the dry chips by air tube to a holding bin several hundred feet away. It handles 12,000 lb per hour and saves 1200 gal of oil weekly.

#### FURNACE TYPES DICTATE DUST CONTROLS — P. 100

Keeping metal furnace dusts and fumes out of the air is a big problem in many industrial communities. The choice of effective control equipment depends on the type of furnace and nature of the dust and fume generated. A comprehensive report now tells how mills and foundries in one area got off the "smog list." It covers regulations, methods and cost of control.

#### SAP PARTS EXHIBIT GOOD PROPERTIES — P. 104

Ability of sintered aluminum powder to retain high mechanical properties after continued exposure at elevated temperatures suggests many interesting applications. It's been tried on compressor blades, pistons and other parts. Its strength is about equal to that of fully heat treated aluminum alloys.

#### BLAST CLEANING PREPARES MILL PRODUCTS—P. 108

Increasing difficulty in disposing of spent pickle liquor plus the costly job of fume removal has directed considerable attention to blast cleaning. Mills have found it economical for carbon, alloy and stainless steels. Better abrasives have helped trend.

### MARKETS & PRICES

#### PURCHASING AGENT AIRS STEEL VIEWS — P. 59

Interviewed by Iron Age, a steel buyer says he places reliable supply high on list of what he looks for in a company. He says buyers are interested in service, quality and price. He emphasizes that broken delivery promises are not forgotten and can prove costly to the company that repeatedly lets a buyer down.

#### PLATE MARKET TIGHTENS FOR PURCHASERS — P. 61

With peak of pipeline demand still ahead, purchasers are going to warehouses to fill demand. Deliveries are extended as far ahead as June. Market tightened rapidly after Jan. 1, will tighten further as new markets develop.

#### PLASTIC PACKAGING GAINS ACCEPTANCE — P. 64

New plastics that provide support and insulation give impetus to industrial packaging uses. Urethane will expand to fill a cavity in a package in form of airtight bubbles that can be made waterproof or water-absorbent. High speed machines handle packaging.

#### STEEL MILLS RUN MARGINAL FACILITIES — P. 143

Steel producers are bringing some marginal facilities into production as they seek to keep pace with strong demand. Consumers meanwhile are lining up their requirements for third quarter and it looks as though the market will continue strong through summer and into the fall. There is little evidence that steel users have been able to rebuild their inventories. Automakers continue a strong factor in market.

#### TIGHTENED MARKET BOOSTS STEEL COSTS — P. 144

Among the reasons for higher average steel costs are: (1) stepped up warehouse purchases by users who normally fill requirements from the mill; (2) purchases at premium prices from "steel brokers"; (3) higher freight costs due to distant mill purchases, and (4) product purchases carrying heavier extra charges than the consumer normally uses.

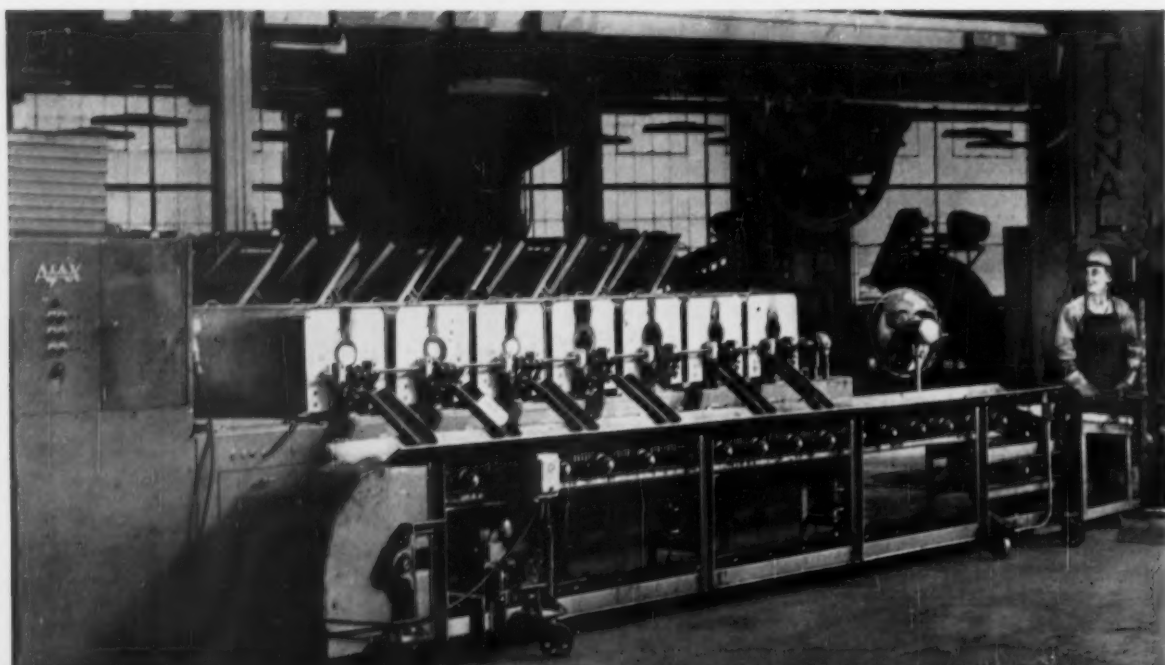
### NEXT WEEK:

#### MAGNETIC TECHNIQUE DETECTS FLAWS IN BILLETS

Inspection of billets, using magnetized particles and ultraviolet light to detect flaws, has a number of benefits—in time, cost and labor. Probably the most important is the better quality and fewer rejects in finished products. Pickling is eliminated entirely. The system is positive, efficient and economical.

#### ARE OUR NUCLEAR WEAPONS REALLY THAT POWERFUL?

Iron Age Editor Tom Campbell has gone to Las Vegas to find out first hand just how fierce new nuclear weapons are. Will they wreck a state? Are you fairly safe if you just keep your head down? If blast goes off on schedule Tom Campbell will report from Las Vegas next week, giving the close-up picture.



## *want to mechanize forging?*

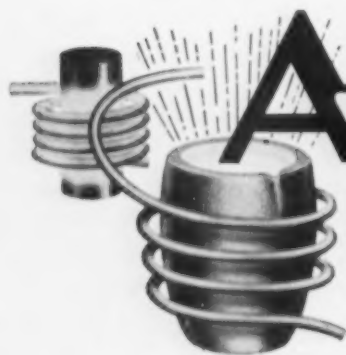
This large forge shop could show you how. Turning out auto and tractor gears along with hundreds of other parts large and small, it relies upon Ajax induction heating for faster, more efficient production . . . lower material cost . . . greatly reduced manpower . . . and an impressively low reject average.

A complete battery of over a hundred Ajax-Northrup heaters can be put into service here for heating bars of various lengths and weights and in sizes from one inch rounds to four inch squares, each scheduled for automatic or even patterned

heating at just the desired rate for the forging operation. Rapid induction heating makes scale formation almost nonexistent; forging dies last much longer.

Here is mechanization brought to the difficult forging process—thanks to the speed, precision, and reproducibility of Ajax-Northrup heating. An Ajax representative will be glad to show you how it can help mechanize your production. Or, just write Ajax Electrothermic Corporation, Trenton 5, New Jersey, for Bulletin 27-B.

Associated Companies: Ajax Electric Company—Ajax Electric Furnace Co.—Ajax Engineering Corp.



# AJAX

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FAIRLESS WORKS**

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- It resists fire damage far better than metals with low melting points

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One of the Publications Owned and  
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Indexed in the Industrial Arts Index  
and the Engineering Index.



## Editorial:

### Keep Your Powder Dry

♦ YOU CAN be sure that any kind of war—big, limited or police action—will bring controls over materials, prices and wages before you can say Jack Robinson.

We are not off the Asiatic tightrope by any means. The Chinese Reds may call our hand at any time. If we do what we said we would do then there will be an "emergency"—big enough to bring on the controls straitjacket.

You may want to check up on your defense orders. See that they are getting top level treatment. Be sure that deliveries are going out when promised. Government people are going to be terribly sensitive about defense orders in view of the Far Eastern outlook.

It might be well to look over your manpower requirements now—and figure what they might be if we got into a war. You may find that skilled labor is as tight if not tighter than materials. You may have to do some new planning; or revise your present plans.

You will have to keep your ears cocked to news about the cold war, rearmament of West Germany, new aid to Asia and changes in U. S. defense plans. Each will affect you directly or indirectly.

There is nothing to suggest that the cold war is less explosive. Good news has been offset by the Formosan situation. And, it's a sure bet that Russia is hauling out one of its craftiest propaganda deals in an effort to halt rearmament of West Germany. Don't be misled.

As time goes on, aid to Asiatic countries will be larger and will include more military items and equipment. Furthermore this aid will proceed on a more common sense basis.

Confusion over foreign military aid is on its way out. Soon we will know much more about what we sent to our allies, where the stuff is and how it is being used. That will make new planning easier.

The domestic picture can change over night. The proposed cut in the armed forces was predicated on the assumption that we would have a broad reserve program. If Congress defeats this goal the cuts will have to be eliminated—or drastically changed.

Besides keeping your powder dry you must plan for a great expansion in the industrial civilian markets. Your job is cut out for you—if you are to stay up front.

*Tom Campbell*

EDITOR



# FOR EXTRA TOUGH SERVICE

## **CATERPILLAR USES ATLAS** ...for long service...low maintenance

Where extra toughness is needed in roller chain the leaders choose Atlas Roller Chain and Sprockets. Precision-made from specially selected steels, Atlas offers longer life in every link. Pins and bushings are "Ni-carb" hardened... each link plate and roller is precision-toughened by an exclusive Atlas heat treating process. Built-in stamina provides extra strength to take the heaviest loads—whether uniform, uneven or severe shock.

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# ATLAS

**ROLLER CHAIN  
AND SPROCKETS**



dear editor:

letters from readers

### Why Write Editorials About . . . ?

Sir:

I want to refer to your editorial "Why Write Editorials About . . . ?"

The page I turn to immediately upon receipt of THE IRON AGE and before passing it around to others in our organization is the editorial page. I believe you give out some splendid editorials and only hope you keep them up and forget the criticism you may receive about them. They are usually to the point and they give us a line on something that maybe we are not paying any attention to in our business life. *H. M. Ellsworth, President, The Ellsworth Steel & Supply Co., 1483 Stratford Ave., Stratford, Conn.*

### ASTE Show

Sir:

I would appreciate knowing where I could find more detailed information concerning two talks, "Grid Line Technique for Draw Dies" and "Magnesium as Tooling Material," listed on page 85 of the March 31, 1955 issue, which were given at the recent ASTE Show. *R. M. Reichl, R. M. Reichl Co., 110-11 70th Road, Forest Hills, N. Y.*

The grid line technique information is available from Max Lauderback, Superintendent of Metallurgy, Kaiser Steel Corp., Fontana, Calif. The magnesium information comes from R. L. Nelson, Technical Service & Development, Magnesium Dept., The Dow Chemical Co., Midland, Mich.

### Electronic Meter

Sir:

We would like to have some more information regarding the electronic meter for checking the quality of adhesive bonds that is mentioned in the March 17, 1955

issue of THE IRON AGE on page 140.

We particularly would like to know if this instrument is commercially available, and if so, the name of the manufacturer.

Any information that you can give us regarding this piece of equipment will be very welcome. *U. H. Gillett, Metallurgist, Barber-Colman, Co., Rockford, Ill.*

We suggest you contact both the Convoir Div. of General Dynamics Corp., Fort Worth, Texas, and Stanford Research Institute, Stanford, Calif. for more information on the electronic meter.

### Waste Disposal

Sir:

Please advise where we may obtain information on waste pickle liquor disposal involving continuous removal of iron sulphate by evaporation.

Mention of this process was made on page 134 of your April 7, 1955 issue. *M. D. Ottaviani, Chief Metallurgist, Columbia Steel & Shafting Co., Pittsburgh.*

More details may be obtained from D. H. Krouse, Divisional Manager, Fischer & Porter Co., Hatboro, Pa.

### Improved Foundry Methods

Sir:

In reference to the "Improved Foundry Methods Sought" News-front item, we would like to obtain more detailed information on the research project and ceramic plant.

We would appreciate your sending us literature or advising us on who to contact for further information. *L. W. Dean, Staff Assistant, AiResearch Manufacturing Co., 9851-9951 Sepulveda Blvd., Los Angeles.*

More details on improved foundry methods may be obtained from Alloy Engineering & Casting Co., Victor Ave., Champaign, Ill.



## HIGH SPEED PRECISION BENDING with DI-ACRO\* Hydra-Power Bender!

Simple and complex bends are readily formed and duplicated in many ductile materials with hydraulically operated Di-Acro Benders. The Bender can be delivered completely tooled for bending moulding, extrusions and other solid materials. Tooling can be made in your own plant if you prefer.

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April 28, 1955



## Gold mine refuse + World's greatest tank lining job = Uranium

URANIUM now is being recovered from the yellow mountains of slimes residue surrounding the gold mines on the Rand in South Africa. The process involves treatment of the abrasive, spent ore with sulfuric acid. No small problem was the protection of the many tanks, pumps and miles of piping from the twin attack of acid and abrasion. The answer was the world's largest sheet-rubber tank lining job.

A vital role in solving the many problems created by the sheer size and remoteness of the installations, plus subtropical heat and rains, was played by the G.T.M.—Goodyear Technical Man. Most important was his

**PLIOWELD Tank Linings by**

# GOOD YEAR

THE GREATEST NAME IN RUBBER

specification of PLIOWELD — especially compounded, acid- and abrasion-resistant rubber—and a *chemically curing* field procedure that eliminated sectionalized tanks or filling the tanks with hot water to vulcanize the rubber to the metal.

Over six and one-half acres of PLIOWELD have been used to protect equipment in this operation to date. Ultimately, some 1,250,000 square feet of tank surfaces, 50,000 feet of pipe and 1,000 pumps will be armored with rubber. How can PLIOWELD help you in your fight against corrosion? For details, see the G.T.M. or write: Goodyear, Industrial Products Division, Akron 16, Ohio.

Ploweld—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

## fatigue cracks

### Story #1

We print the following only because we want to. It is authored by Miss Pat Coffey, age 7. It is a story about life in the j-u-n-g-l-e.

#### the jungle

A walking through the jungle one sunny afternoon we saw an chimpanzee it said hello and we said hello back to it. And we went on through the jungle.

We realize that every father of a seven year old will say, "mine can do much better." But how many can get it into print? See?

We want to make sure that when Pat becomes another Grace Kelly that the people who write biographies can refer to this and say as they usually do "at an early age Pat Coffey showed genius." And there's no doubt about that, too, by gosh. Either.

### Story #2

Here are some more of Chance Vought's job descriptions which we find amusing and look at the space they take up, too.

**The Materials Manager.** A born collector, the Materials Manager is the pack rat of the Aircraft Plant, constantly hoarding bits of rare metals and old jigs and fixtures against his mortal enemy, the Unexpected Contingency, which causes his tender skin to break out with a rash of Shortages. A voracious reader, he loves to quote passages from Hemingway's novel, "To Have and to Have Not."

**The Sales Representatives.** No creatures in the aircraft plant are fuller of freedom and enterprise than the Sales Representatives. Driven by their thirst for knowledge, they are great burners of midnight oil. Friendly, brave, and gregarious, they fear only one thing, a Deferred Decision—a disease which sometimes attacks their appetite by

by William M. Coffey

causing atrophy of the Procurement Pact.

**The Mechanic.** Confronted with the latest scientific diseases which can affect young aircraft, such as electronic measles, small pox machs, and mumps of the armament gland, the Aircraft Mechanic peers into the intestinal tracts of these supersonic fledglings, grills the Engineering internes, and then calmly cuddles the little craft into contentment.

### Puzzlers

Jim Mull and Marilyn *did* get the watch puzzler. The answer to the March 31 puzzler is 400. The winners: Mel Tudor, Dictograph Products, I. M. Darcy, Charlise, Dale Letterman and Orville of General Steel Castings Corp., Donald F. Stoneburner, C. L. Langenberg, H. C. Husser, Jim Mull and Marilyn, The North American Manufacturing Co., F. E. Fitzgibbon, Keen Manufacturing Corp., Gordon Stephenson, Mildred Chapman who also solved the big number and the carpet puzzlers. L. D. Deere, The Dow Chemical Co., Mr. G. J. Campbell, C. E. Rick, R. W. Shank (we're doing what you asked, Mr. Shank), International Harvester, William Greene, American Steel and Wire Co., J. S. Prifogle, Belden Manufacturing Co., Richard A. Patterson, Austin H. Phelps, ole Joe Brugman, ole Abe Raich, Colorado Fuel and Iron, L. T. Jensen, Torit Manufacturing Co., Robert E. Cates and Henry Styskal of the Philco Co.

### New Puzzler

What 10 digit number multiplied by a 9 digit number will give a product having 19 digits in ascending & descending order? Many thanks to C. W. (Old Reliable) McKinley of AC Spark Plug for this one. Get to work.

# Leading Aircraft

Manufacturers

use



## aluminum tooling plate



**BOEING**



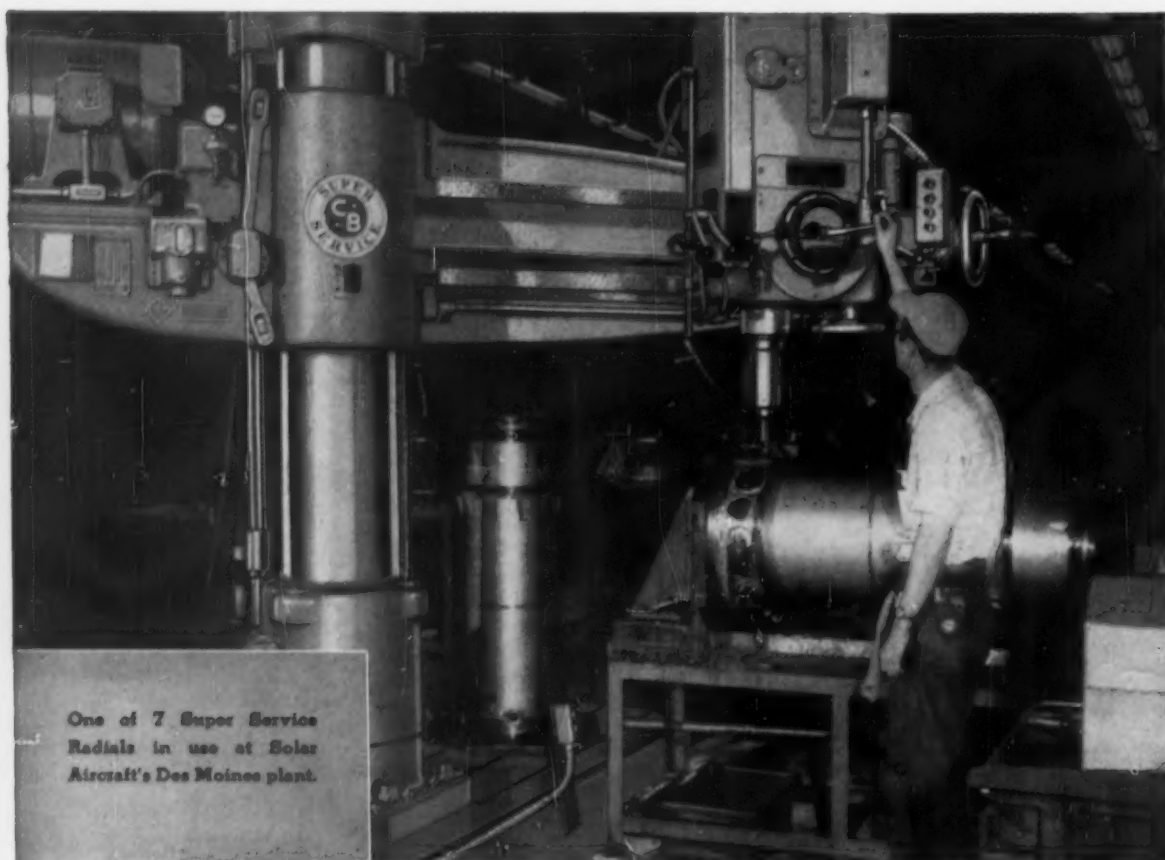
Investigate...



The advantages of low cost Red Seal Plates and Bars for your tooling requirements. Call or write for this new Red Seal Aluminum Products Brochure.

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One of 7 Super Service Radials in use at Solar Aircraft's Des Moines plant.

*Photos courtesy Solar Aircraft Company, Des Moines, Iowa.*

## "well pleased..."

*"Our production people and our plant engineering department, who install and service equipment, are well pleased with our Cincinnati Bickford drilling machines."*

• Solar Aircraft Company

Both large and small Cincinnati Bickford Super Service Radial Drills are used here in producing jet engine components. The arm of the machine shown above is swinging over two working positions permitting the completion of all drilling operations at both stations with a minimum of work handling. Altogether there

are 10 holes drilled and reamed, 18 holes drilled and tapped, and two .656" dia. half moon radii accurately machined in this tough high-alloy steel. The accuracy, speed and trouble-free performance, the power and easy control of these machines have made them popular to both engineers and operators.

Write for Catalog R-29.

80 YEARS OF SERVICE

... **CINCINNATI  
BICKFORD**



RADIAL AND UPRIGHT DRILLING MACHINES

**THE CINCINNATI BICKFORD TOOL CO.**  
Cincinnati 9, Ohio, U.S.A.



## dates to remember

### MAY

**NATIONAL SCREW MACHINE PRODUCTS ASSN.**—Annual meeting, May 4-7, Statler Hotel, Buffalo. Association headquarters are at 2860 E. 130th St., Cleveland.

**STEEL BOILER INSTITUTE, INC.**—Annual meeting, May 9-10, The Shamrock, Houston. Institute headquarters are at 1308 Land Title Bldg., Philadelphia.

**NATIONAL ASSN. OF CORROSION ENGINEERS**—Regional Conference, May 9-11, Hotel Statler, New York. Association headquarters are at 1 Main St., Houston 2, Texas.

### EXPOSITIONS

**METAL POWDER ASSN.**—Annual meeting and Metal Powder Show, May 10-12, Bellevue-Stratford Hotel, Philadelphia. Association headquarters are at 420 Lexington Ave., N. Y. 17, N. Y.

**NATIONAL MATERIALS HANDLING EXPOSITION**—May 16-20, International Amphitheatre, Chicago. Management: Clapp & Poliak, Inc., 341 Madison Ave., New York.

**NATIONAL ASSN. OF PURCHASING AGENTS**—Annual convention and Inform-A-Show, May 29-June 1, Waldorf-Astoria Hotel, New York. Association headquarters are at 11 Park Place, New York.

**BASIC MATERIALS EXPOSITION**—May 31-June 3, Convention Hall, Philadelphia. Show management: Clapp & Poliak, Inc., 341 Madison Ave., New York.

**METAL TREATING INSTITUTE**—Spring meeting, May 9-11, Ambassador Hotel, Los Angeles. Institute headquarters are at 271 North Ave., New Rochelle, N. Y.

**NATIONAL ASSN. OF SHEET METAL DISTRIBUTORS**—Spring meeting, May 12-13, Cleveland Hotel, Cleveland. Association headquarters are at 1900 Arch St., Philadelphia.

**INDUSTRIAL HEATING EQUIPMENT ASSN., INC.**—Spring meeting, May 15-18, The Homestead, Hot Springs, Va. Association headquarters are at 412 Fifth St., N. W. Washington, D. C.

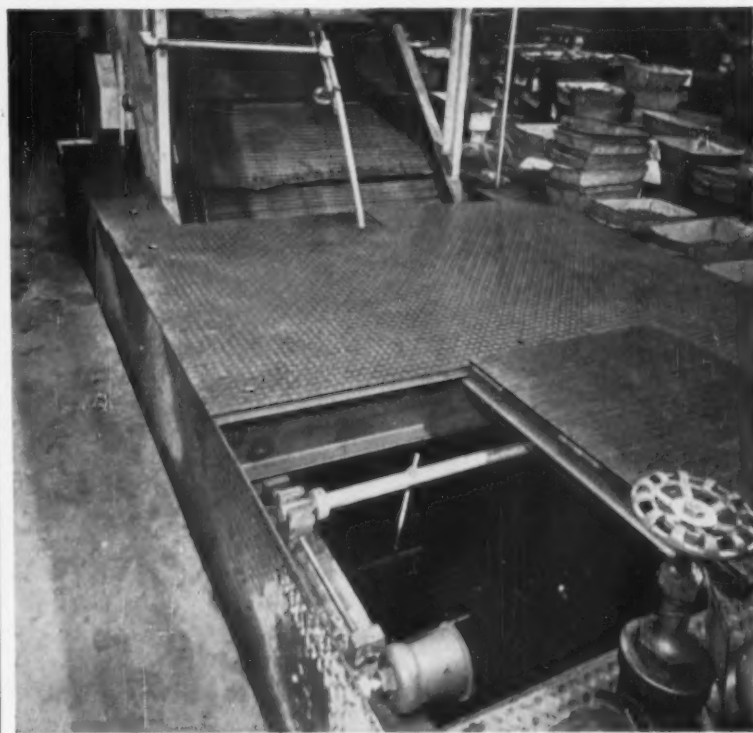
**PORCELAIN ENAMEL INSTITUTE**—Mid-Year Division conference, May 18-20, Edgewater Beach Hotel, Chicago. Institute headquarters are at Dupont Circle Bldg., 1346 Connecticut Ave., N. W. Washington, D. C.

**AMERICAN MANAGEMENT ASSN.**—Conference, May 23-25, Hotel Roosevelt, New York City. Association headquarters are at 330 W. 42nd St., New York.

**MACHINERY DEALERS NATIONAL ASSN.**—Convention, May 23-25, Netherland Plaza Hotel, Cincinnati. Association headquarters are at 1346 Connecticut Ave., N. W. Washington, D. C.

**AMERICAN FOUNDRYMEN'S SOCIETY**—Annual convention, May 23-27, Annual convention, Houston. Society headquarters are at Golf & Wolf Rds., Des Plaines, Ill.

## HOT SPOT IN HARTFORD!



### 1575 GALLONS OF OIL NEAR A 1700° FURNACE!

A king-size oil quench is a bad enough fire hazard by itself. Put it next to a roaring, 1700 degree hardening furnace, and it could turn a plant into a cinder pile!

So the Allen Manufacturing Company discovered when they installed this hardening and tempering machine in their Hartford, Connecticut plant!

From the hardening furnace, hex-socket screws are quenched in oil, tempered, then quenched again. A flash fire in the huge oil quenching bath could mean loss of the machine, costly down time—and possible loss of the entire plant!

Safety-minded Allen executives naturally took proper precautions, held the oil far below its flash point with thermostatic temperature controls. Still, they realized

that more protection was needed! So Allen called on Kidde—long-time specialists in fire extinguishing systems.

Kidde engineers studied the problem, installed a special carbon dioxide extinguishing system which could be triggered instantly.

If fire strikes, one pull on a control handle pours clouds of fire-killing CO<sub>2</sub> over the blaze, snuffing flames in seconds. At the same time, pressure-operated switches in the lines automatically shut down feed and conveyor motors!

All fire hazards—dip tanks, flammable liquids and electrical equipment—are potential plant-wreckers. Make sure they get the *proven* protection of Kidde extinguishing equipment. Call your Kidde agent today!

# Kidde



Walter Kidde & Company, Inc.

449 Main Street, Belleville, 9, N. J.

Walter Kidde & Company of Canada, Ltd., Montreal—Toronto

The words 'Kidde', 'Lux', 'Lux-O-Matic', 'Fyre-Free' and the Kidde seal are trademarks of Walter Kidde & Company, Inc.

# A Demonstration of the **LANDIS** Thread Rolling Machine

---

THE WORLD'S LARGEST

---

## on your workpieces

The new LAN-HY-ROL Thread Rolling Machine offers a combination of precision, productivity, and flexibility in generating external threads unequalled by any other machine now available in the Western Hemisphere. Yet we believe that its superiority is so great that its unlimited potentialities cannot be understood without seeing actual operation.

Therefore, we are offering all manufacturers an operating demonstration of the new LAN-HY-ROL, using your own workpieces if you prefer. Send us the necessary thread specifications and prepared workblanks—we will make the dies required at our own expense, then arrange an operating demonstration here in Waynesboro at your convenience.

The new LAN-HY-ROL is based on a rolling system using two circular thread rolling dies and a work support blade. It will produce UNC and UNF threads to tolerances up to and including Class 4, and will also roll Acme, worm, and other special threads. The LAN-HY-ROL will roll threads from 3/16" to 3" in diameter up to 5-7/8" long by plunge rolling, and up to 72" by thrufeed rolling. It can also be equipped for automatic hopper feeding, semi-automatic hand feeding, or rolling special threads between centers.

Plan today to investigate the cost-saving advantages of the new LAN-HY-ROL Thread Rolling Machine. Contact us direct in Waynesboro, or through one of our field representatives, about arranging a demonstration.



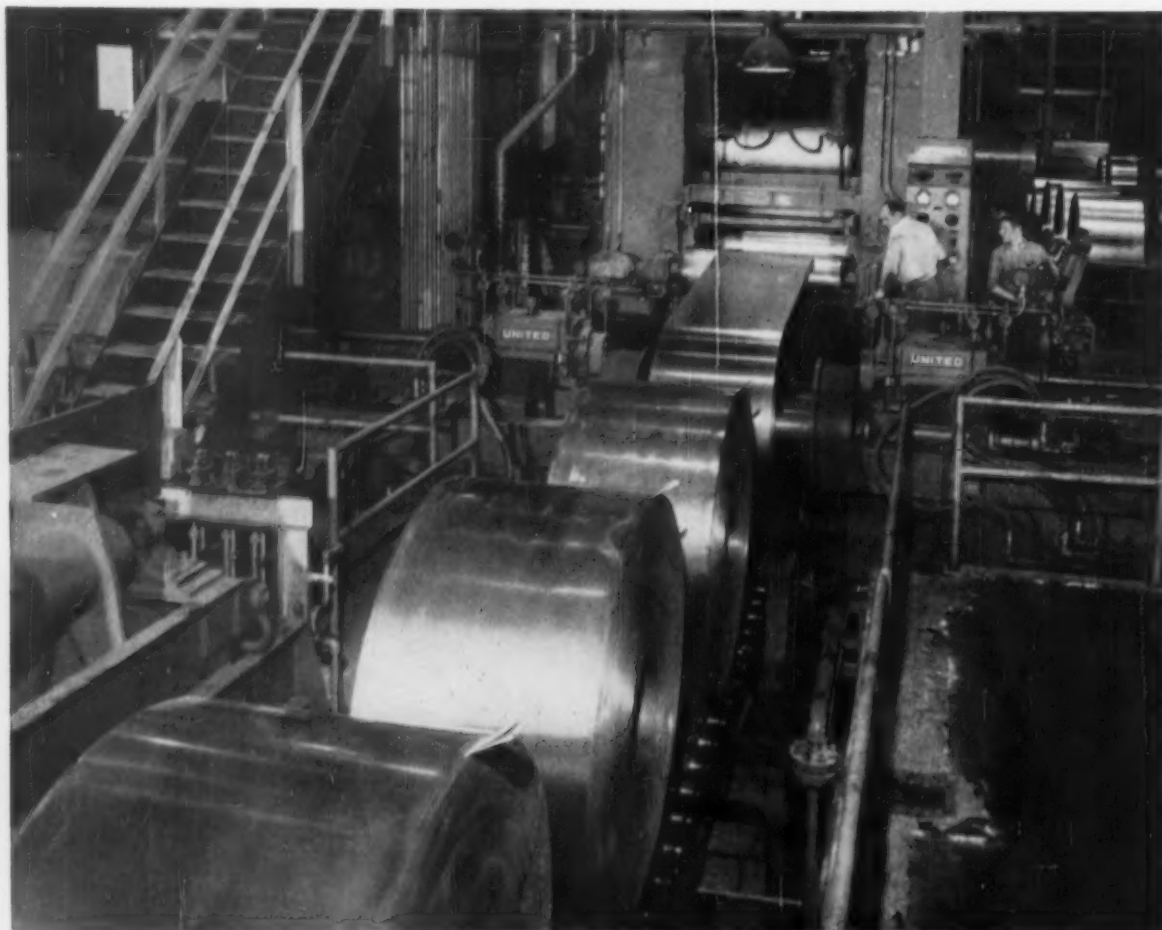
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MANUFACTURER OF THREADING EQUIPMENT—CUTTING—TAPPING—GRINDING—ROLLING



**LANDIS Machine CO.** WAYNESBORO  
PENNSYLVANIA

# Let's discuss your requirements NOW for cold rolled sheets and strip



Tempering sheets in our new cold-rolled mill, Indiana Harbor Works, East Chicago, Ind.

●Our new continuous cold-reduced mill at East Chicago is turning out the finest sheets and strip that modern equipment can produce. And we are running on a full schedule to meet the heavy demand.

But more and more customers want more and more sheets. Our output is booked for weeks ahead, so you can help us to help you by letting us know your requirements right away.

Let's discuss your sheet and strip problems. Call our nearest District Sales Office now.



**COLD ROLLED  
SHEETS AND STRIP**

# Youngstown

## THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of  
Carbon, Alloy and Incoloy Steel

General Offices: Youngstown, Ohio - District Sales Offices in Principal Cities

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HOT ROLLED RODS - CORE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES



## latest edition...

*Extra! Few sights in the machine age are more dramatic than watching the latest edition of your daily paper roll off the presses. Few machines have to meet such split-second demands as newspaper conveyors. Federal lubri-sealed Ball Bearings help keep 'em rolling.*



## so much of industry turns on FEDERAL ball bearings

Whether you're behind the headlines or headlights — or make hoists or harvesters... Whether you work in a machine shop or office — you'll find Federal Ball Bearings on the job. Hundreds of types — over 12,000 sizes — all produced by this 50-year-old company devoted *exclusively* to the manufacture of anti-friction ball bearings.

When Federal Ball Bearings are a part of so many things you *use*, shouldn't they be a part of the things you *make*?

*New! Ball bearing and engineering data! 175 pages full in FEDERAL'S NEW CATALOG! To get your copy, just drop us a line.*

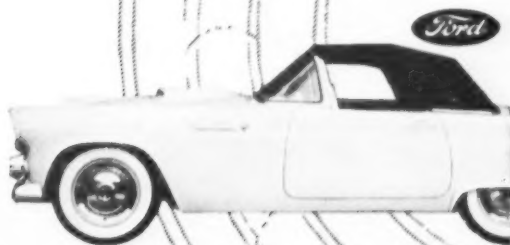
THE FEDERAL BEARINGS CO., INC. • POUGHKEEPSIE, N. Y.

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Ball Bearings

One of America's Largest Ball Bearing Manufacturers

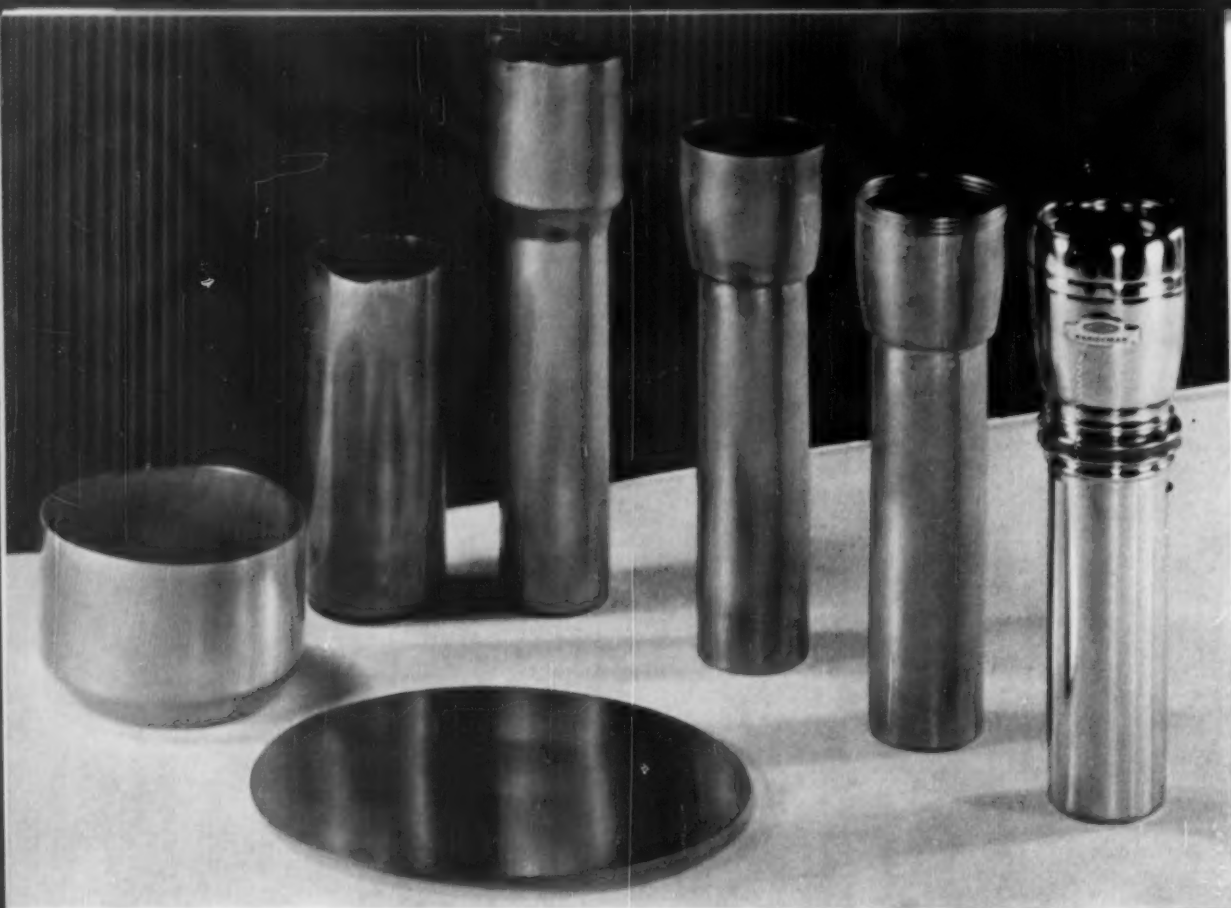
April 28, 1955



## ...or latest model

*So much of a car's smooth, quiet running performance and safety depends on its ball bearings! And millions come off the automotive assembly lines, precision-equipped with Federal Ball Bearings.*





1. The Evolution of a flashlight, from electro-copper coated steel strip to finished product . . .

## \$100,000-A-Year Production Idea

Take a stroll through the Blake Manufacturing Division of Ray-O-Vac Company. Then you will understand how this firm arrived at its slogan: "Miracles in Metal."

In its plant at Clinton, Massachusetts, Ray-O-Vac produces the largest line of flashlights in the world, all of modern styles and designs, ranging from pocket models to five-cell spotlights and Hunter Lanterns. The volume moving off the production lines, wrapped and packaged for display, runs into the millions each year.

From start to finish, the plant is modernly equipped and efficiently organized. Through experience and ingenuity, it has developed production techniques that are in many ways unique. For example, take the manufacture of flashlight cases.

On models where brass traditionally has been most used, Ray-O-Vac is now making cases of steel. Because both types of cases are chrome finished, you can't tell a brass flashlight from a steel one by looking at it. They are both corrosion resistant, highly polished, and beautifully contoured.

But try standing on one. The brass

case flattens out. The steel case doesn't. Ray-O-Vac has come up with a rugged product that gives it a quality advantage in competitive markets. The interesting fact is that it has done this with production savings that run from 17 to 29 per cent.

• **How It Was Done**—As in most worthwhile ventures, the transition wasn't made overnight. Blake Division engineers first began experimenting with plain drawing quality steel. The depth of the draw required for a flashlight case is an extremely severe one. No matter how they designed their dies or regulated the drawing cycle, they couldn't find a plain steel that would do the job.

Next, they called in the specialty strip men from Thomas Strip Division of Pittsburgh Steel Company. Thomas development engineers joined Blake's, and together they began exploring the possibilities of special drawing quality steel with an electrolytic coating of copper. The copper coating provides a good die lubricant and a good base for chrome plating.

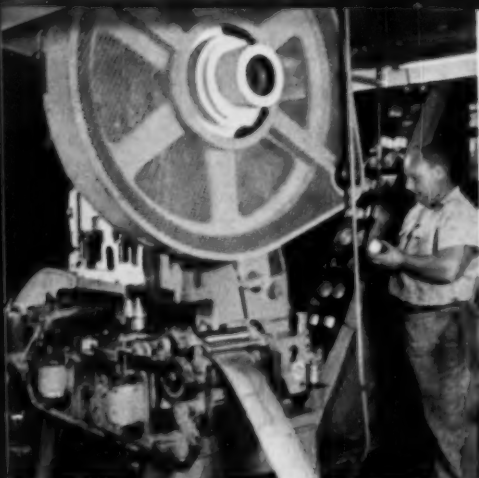
One year and nine trial lot ship-

ments later, they came up with the answer. Today, Blake is using .020 gage non-scalloping deep drawing quality strip steel produced by special processing techniques developed at Thomas, electro-copper coated on both sides, 6 $\frac{3}{8}$  inches wide in 450-pound coils.

This may sound complicated, but specialty strip steel such as this is the forte at Thomas, and they can produce it with consistently uniform quality that gives Blake a maximum yield from every coil.

• **In Production**—To watch these coils of electro-copper coated strip become flashlight cases at Blake gives you the impression that if there is nothing miraculous involved, at least the engineers were closely akin to technical wizards.

The coils are fed into a double action press. It cuts a round blank from the strip that is 6.398 inches in diameter. From there, in a series of four drawing operations without annealing, this round, flat disc of cold steel becomes a single-piece flashlight case 7 $\frac{1}{2}$  inches long with a battery case diameter of 1.517 inches



**2. Begins** at this double action press that blanks out a circular disc and draws it into the shape of a cup.



**3. The Cup Becomes a Tube** as the cold steel flows under tremendous pressure, then shaped into a...



**4. Flashlight Case** on a horizontal press that also forms the flashlight head.

and a formed head with a diameter of 1.945 inches (photo No. 1).

As the first press has a double action (photo No. 2), it also makes the first draw. Here's where the "Miracles in Metal" begins as the steel flows under tremendous pressure, producing a smooth-surfaced and even-edged cup  $3\frac{1}{8}$  inches deep with a base diameter of 3.480 inches. The redraw press (photo No. 3) makes two draws with the maximum reduction on each. It turns out a closed end tube 5 inches long and 1.954 inches in diameter.

The tube is then fed to a horizontal redraw press (photo No. 4) that makes a further reduction, forming the cell case and head. The head is trimmed, shaped, roll threaded and knurled. Finally, the case is given a heavier copper plating, buffed and polished, chrome plated, then delivered to the assembly lines (photo No. 5).

Compared to the fabrication of cases with brass, electro-copper coated strip is fabricated more rapidly and requires less processing. Two annealing and pickling operations and one redraw have been eliminated. Fewer tubes need to be stocked ahead of press operations. From the first press through the last forming operation, Blake's equipment produces steadily at a rate of about 1,400 pieces an hour.

• **The Pay-Off**—Savings, including the lower initial cost of electro-copper coated steel strip compared to brass, range from 3 cents to 6 cents per flashlight case on models produced from steel. On three popular models alone, these savings amounted to more than \$100,000 last year.

Add to this the important fact that Ray-O-Vac is building a better quality flashlight with advantages

that increase sales, and the slogan "Miracles in Metal" takes on increased significance.

If you are fabricating products from more expensive metals, why not consider the use of Thomas pre-coated strip steel? Perhaps you can accomplish similar savings and improve your product.

Thomas strip begins with good steel of correct analysis in a variety of tempers. It is cold rolled to exacting tolerances. Then it can be coated electrolytically with zinc, lead alloy, copper, brass, nickel or chrome... hot dip tin and lead alloy coated... or lacquer coated in different colors. It offers the luster of planished or buffed finishes. Altogether, Thomas produces the widest range of strip steel specialties in the industry.

Thomas Strip is more than a product, it is a production idea. Why not call a representative to discuss your problems with you and offer suggestions. You will find him ready to give you prompt, personal service without obligation. Write for descriptive literature.



**5. Finished cases** receive a chrome plating. Assembly of switches, lens rings, springs, caps, etc. is done on one of eight lines such as this, producing at rates up to 30,000 packaged flashlights a day.

**Thomas Strip**  
Division

**Pittsburgh Steel Company**

Grant Building

Pittsburgh 30, Pa.

**DISTRICT SALES OFFICES:** Atlanta • Chicago • Cleveland • Columbus • Dallas  
Dayton • Detroit • Houston • Los Angeles • New York • Philadelphia • Pittsburgh  
San Francisco • Tulsa • Warren, Ohio. **PLANTS:** Monessen, Pa. • Allentown, Pa. • Akron  
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now includes 2319 towns.

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Whether your need is dispersion, decentralization or expansion, the American Gas and Electric Company can help simplify your plant-site selection problem. As it has for hundreds of other

manufacturers, both large and small, it can bring pertinent information right to your desk ready for measurement by your own yardstick.

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# Bliss chooses TIMKEN® bearings for extra-big loads in world's largest knuckle-joint press

**W**HEN its customer needed a press to coin cups for artillery shell cases, Bliss created the largest knuckle-joint press ever built—a 4000-ton giant that not only costs less, but actually outproduces a greater-capacity press in this application.

Bliss engineers specified Timken® tapered roller bearings on press drive shaft and flywheel because Timken bearings have the capacity for unusually heavy loads, are built for long trouble-free life.

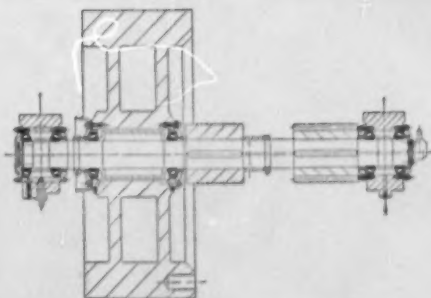
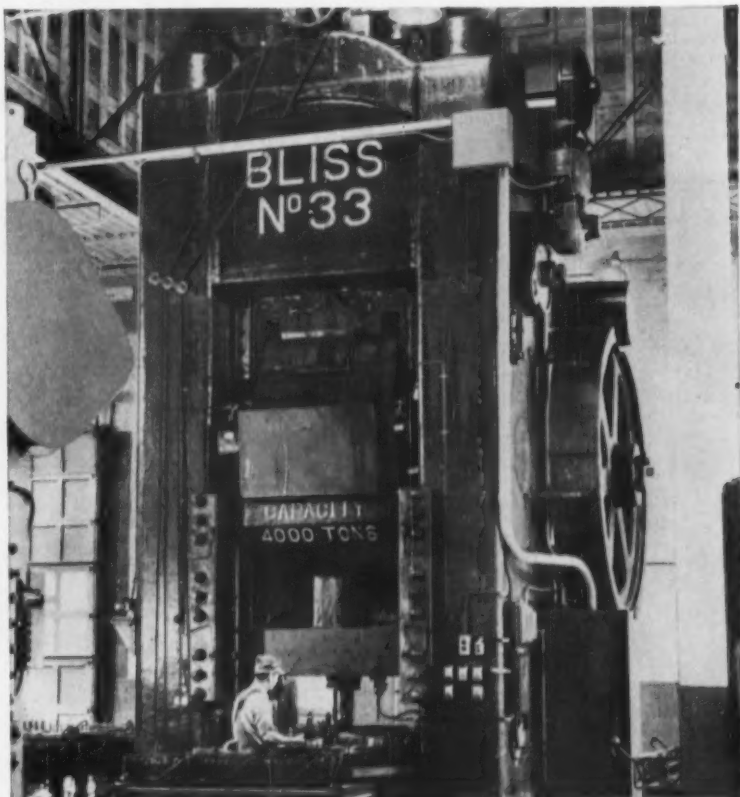
Full line contact between rollers and races gives Timken bearings their remarkable load-carrying capacity. Made of nickel-rich Timken fine alloy steel, they normally last the life of the machine.

Tapered construction enables Timken bearings to carry any combination of radial and thrust loads. They hold shafts rigid—keep moving parts in proper alignment. Effective closures retain lubricant and keep out destructive dirt, so that maintenance is reduced to a minimum. Manufactured to extreme limits of precision and finished to incredible smoothness, Timken bearings practically eliminate friction.

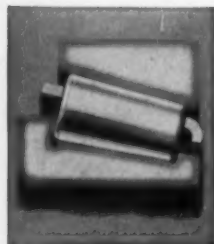
In every machine you build or buy, get all the advantages only Timken bearings can give you—look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.



HERE'S HOW E. W. BLISS COMPANY mounts the flywheel of their No. 33 press on Timken bearings, for extra load-carrying capacity and long, trouble-free bearing life.



#### GREATER LOAD AREA

Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

Only Timken tapered roller bearings have these advantages: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. nickel-rich Timken alloy steels.



**TIMKEN**  
TRADE-MARK REG. U. S. PAT. OFF.  
**TAPERED ROLLER BEARINGS**

NOT JUST A BALL ● NOT JUST A ROLLER ○ THE TIMKEN TAPERED ROLLER ○ BEARING TAKES RADIAL ○ AND THRUST ○ LOADS OR ANY COMBINATION ○

# NIAGARA 2 POINT

tomorrow's



Niagara Series BI Gap Frame,  
Double Crank Inclined Press.

# INCLINABLES

design for today's production needs\*

From crown to base . . . taking in every part and operating feature . . . the Niagara Double Crank Inclinable Press Series stands alone in advanced engineering. By record and by reputation, this is the press with the best future for cost-cutting, production-boosting, long die area work.

## \* LONGER LIFE FOR LONG DIES

Niagara's double crank design resists tilting of the slide under off-center loading, thereby reducing misalignment of dies. Rugged, welded steel plate, box type slide rigidly supports punches. Heavy duty, rigid, integrally built frame properly resists deflection, maintaining permanent alignment of bearings and slide.

## FASTER WORK HANDLING

Die area is accessible from *all* sides. Work may be fed from either side or front-to-back with equal facility, and is quickly discharged by gravity through the unobstructed opening in the back when the press is inclined . . . yes, even long work!

## GREATER VERSATILITY

A tremendous variety of blanking, perforating, forming and drawing operations can be performed, with emphasis on work requiring long die areas. All presses in the series are designed to readily accommodate pneumatic die cushions which Niagara furnishes complete with accessories and fittings.

## HIGHER PRODUCTION RATE

Optionally equipped with automatic feeds and variable speed drives, Niagara 2-Point Inclinales are well suited to large quantity production and long, continuous runs.

## MORE ECONOMICAL MAINTENANCE

Features that spell *stamina* and *ruggedness* . . . welded steel plate frames with box section crowns and deep beds forming rigid ties between uprights; welded steel plate, box type slides; precision "V"-flat gibs; bronze bushed main bearings; self-aligning ball-seat connections; Niagara electro-pneumatic and mechanical sleeve clutches . . . all combine to keep maintenance at a practical minimum.

• • •

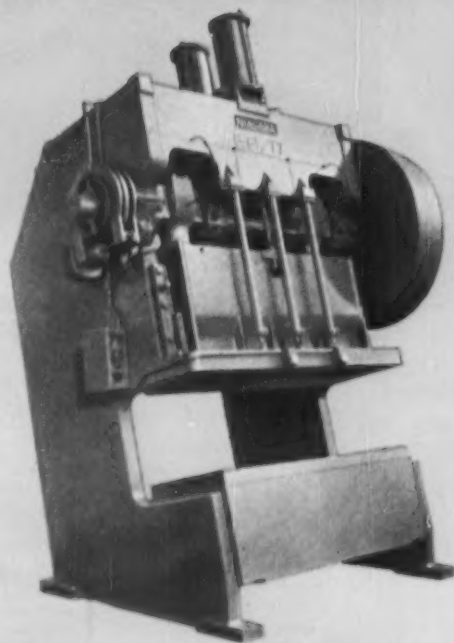
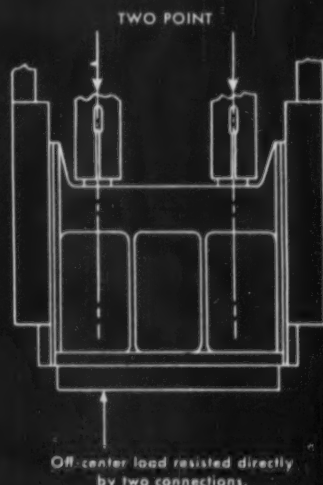
Standardized in capacities from 65 thru 222 tons, Niagara Series BI Double Crank Inclinaire Presses are your most logical answer to long die area work. For still longer requirements, Niagara builds a complete line of permanently inclined or upright Series B Presses.

Obtain complete details on *all* the noteworthy Niagara features by requesting Bulletin 65. Consult with a Niagara engineer about *your* problems.



**NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.**  
DISTRICT OFFICES: Buffalo • Cleveland • Detroit • New York • Philadelphia  
Dealers in principal U. S. cities and major foreign countries

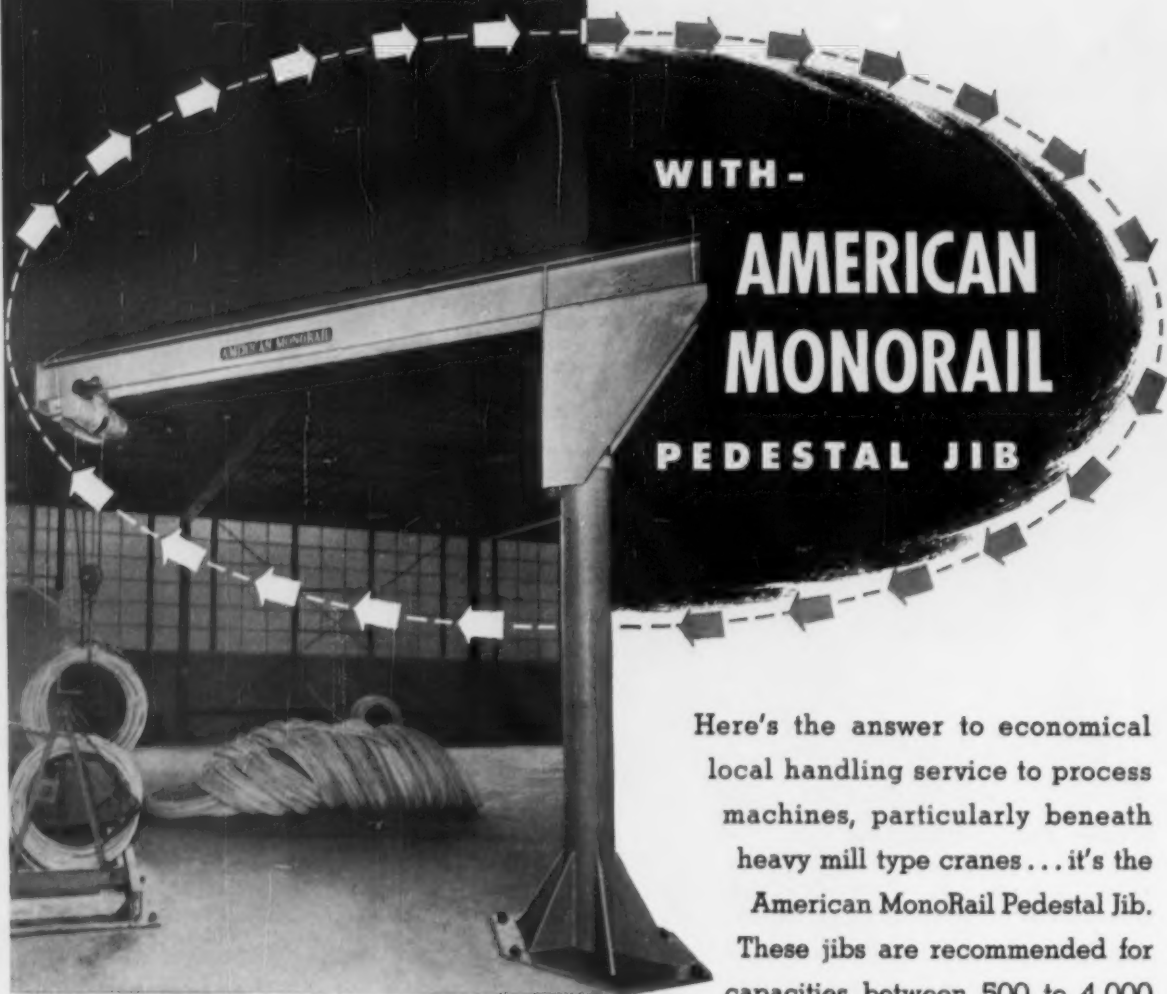
**America's Most Complete Line of Presses, Shears, Machines and Tools for Plate and Sheet Metal Work**



Niagara permanently inclined, gap frame, double crank press.



**360° hoist hook service...**



**WITH -**

**AMERICAN  
MONORAIL**

**PEDESTAL JIB**

Here's the answer to economical local handling service to process machines, particularly beneath heavy mill type cranes... it's the American MonoRail Pedestal Jib.

These jibs are recommended for capacities between 500 to 4,000 pounds, headroom 9 and 12 feet, and boom length 8 and 12 feet... a truly precision built, skillfully engineered job.

Turn to American MonoRail for any overhead handling requirements. Your American MonoRail engineers will be glad to consult with you.

For any MonoRail application  
write for Bulletin C-1.



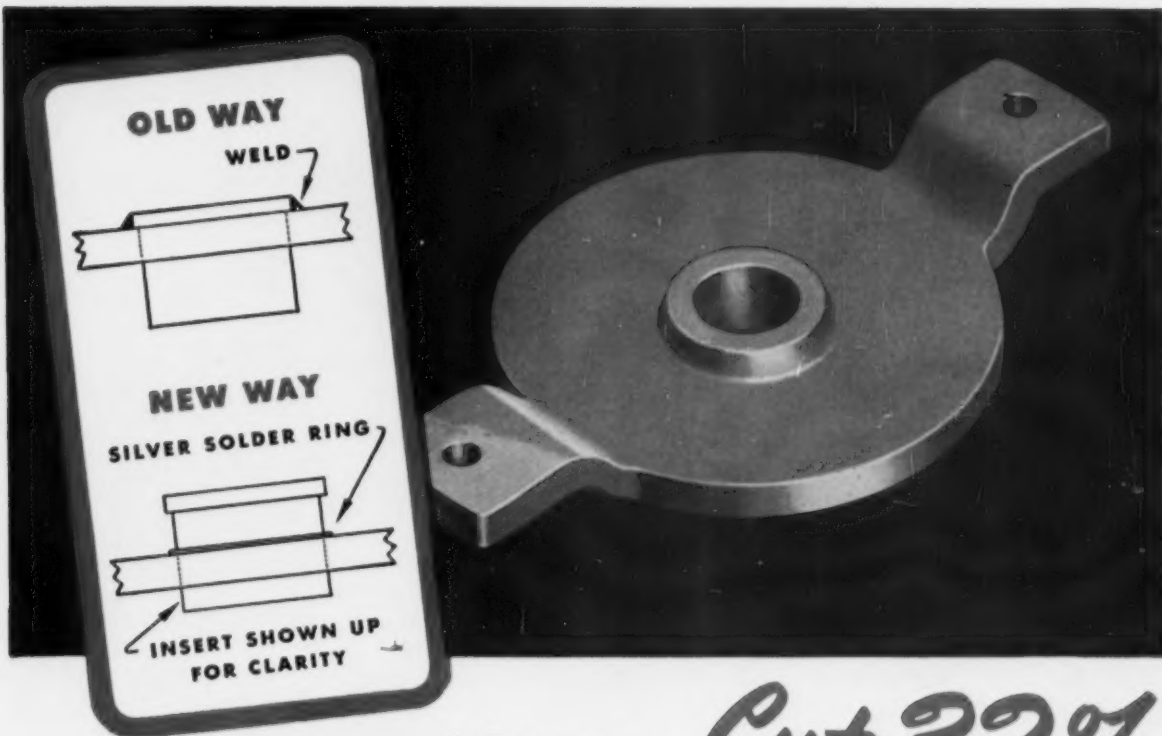
**AMERICAN**

OVERHEAD  
HANDLING  
EQUIPMENT

**MonoRail** COMPANY

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[IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.]





## Assembly Cost *Cut 32%* with TOCCO\* Induction Brazing



**Now's the time to balance YOUR production budget**

This assembly may bear no resemblance to your product, but its case is typical of the savings accomplished by Induction Heating of metal parts of all sizes and shapes.

Formerly the Norris Thermador Corpora-

tion used arc welding to join the bushing and clamp shown above. In an effort to reduce costs TOCCO Induction Heating was brought into the production picture with the following results:

### OLD METHOD (Arc Welding)

Material (rod) . . . . . \$ 4.56 per M parts  
Labor . . . . . 20.63 per M parts  
Overhead . . . . . 21.25 per M parts  
Total Cost Old Method . . . \$46.44 per M parts

### NEW METHOD (TOCCO Induction Brazing)

Material (solder and flux) . . \$13.83 per M parts  
Labor . . . . . 8.82 per M parts  
Overhead . . . . . 9.08 per M parts  
Total Cost TOCCO Method . . \$31.73 per M parts

TOCCO Engineers are glad to survey your operations for similar cost-cutting results—no obligation, of course.

**THE OHIO CRANKSHAFT COMPANY**



# TOCCO

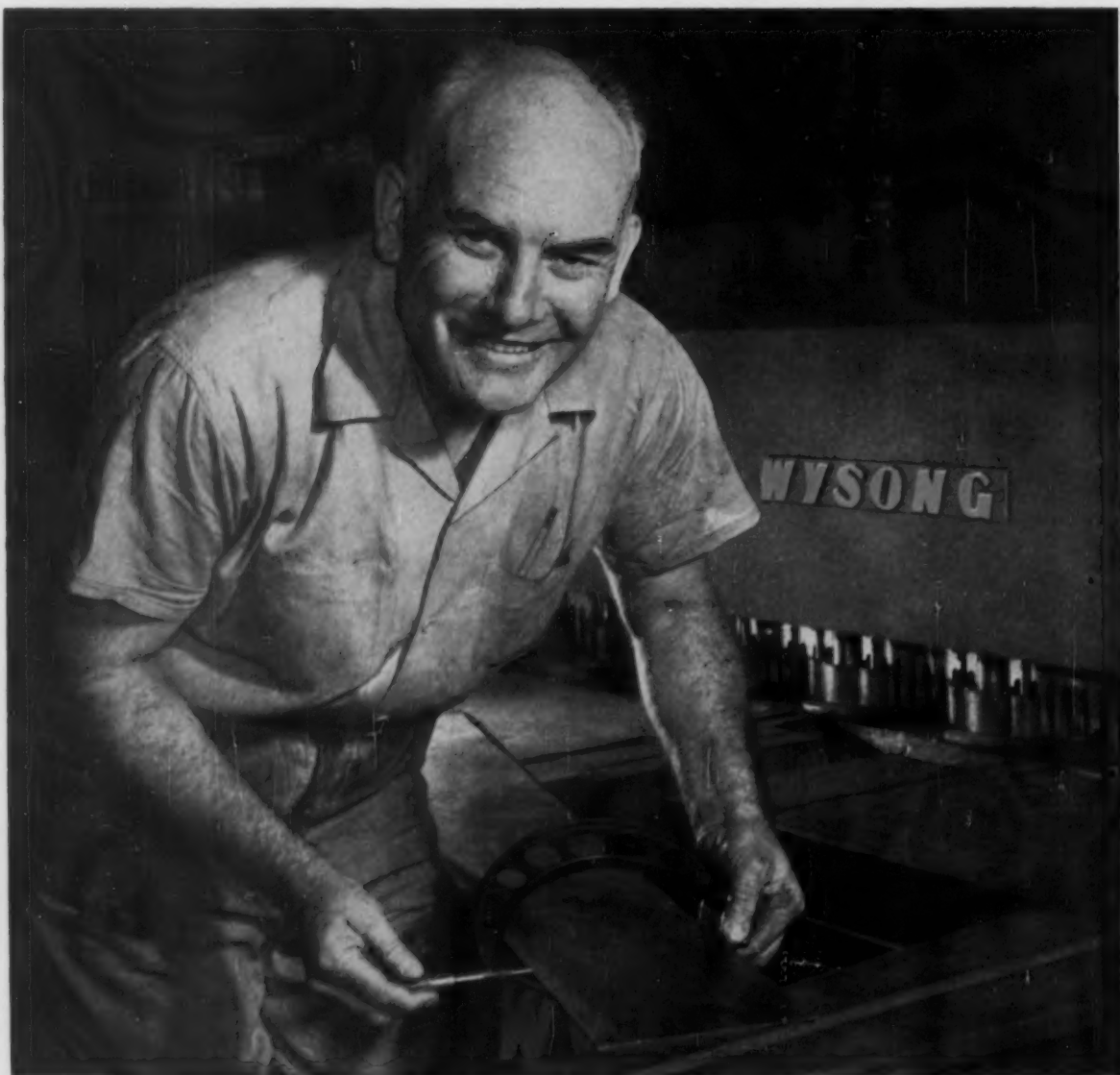
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**THE OHIO CRANKSHAFT CO.**  
Dept. A-4, Cleveland 1, Ohio

Please send copy of "Typical Results of TOCCO Induction Brazing and Soldering."

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Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



## SHEAR SATISFACTION!

When you use a Wysong, you will know what I mean—a clean, *accurate* cut and complete confidence that the next cut will be just like it.

Wysong Shears are designed and built for that kind of shearing — rugged enough to withstand the shock of capacity shearing, rigid enough to maintain accurate alignment.

You will want to know about the rigid, hi-tensile castings; the drive unit which runs in oil; the non-repeat unit; the positive, compensating holddown; the ball-bearing precision back gauge; and other superior Wysong features. They add up to SHEAR SATISFACTION—for the boss and the operator, too.

Before you buy, investigate WYSONG . . . it's MILES ahead! See your dealer or write factory for new catalog.

# WYSONG

**WYSONG AND MILES COMPANY • GREENSBORO, NORTH CAROLINA**

*Builders of Precision Machines For Over Fifty Years.*

TUTHILL PUMP COMPANY EXPERIENCES...

# "NO FAILURES

SINCE USING

## STRESSPROOF®

SEVERELY COLD-WORKED, FURNACE-TREATED  
STEEL BARS

SAVES MONEY, TOO!"

● Tuthill knows the rotor is the heart of their pump. Quality cannot be compromised. For more than 10 years, Tuthill has used STRESSPROOF for rotors (replacing heat-treated alloy steel) without a failure!

Strength is required in these rotors to transmit the power through the shaft to the idler gear. Extremely high operating speeds mean the rotors must be straight. Wearability is an absolute necessity if the rotors are to stand up under severe operating conditions.

STRESSPROOF has all of these qualities. In addition, it is readily machinable. Its in-the-bar strength eliminates heat treating with its distortion, cleaning and subsequent machining problems. No rough machining, heat treating and finish machining with STRESSPROOF. The rotors are finish-machined from the bar.

STRESSPROOF's minimum warpage eliminates all straightening operations in this case. Its wearability keeps the rotor running year after year. It also provides real savings in both material and manufacturing costs.

STRESSPROOF makes a better part at a lower cost.

AVAILABLE FROM LEADING STEEL DISTRIBUTORS  
COAST-TO-COAST



# La Salle STEEL CO.

1436 150th Street, Hammond, Indiana

MANUFACTURERS OF AMERICA'S MOST COMPLETE LINE OF  
QUALITY COLD-FINISHED STEEL BARS



Tuthill Model L Series mechanically sealed pumps are used in lubricating, hydraulic, transfer and burning oil service. Capacities range from  $\frac{1}{2}$  to 6 g.p.m. at pressures up to 600 p.s.i. The rotors for these dependable industrial pumps are made from La Salle STRESSPROOF.

### WRITE TODAY FOR

helpful data bulletin No. 15...  
"Improve  
Quality —  
Cut Costs"



\* Built & Sold by Waterbury-Farrel  
In The United States Of America And Canada Only.



## SCREW SLOTTING NEWS



### REVOLUTIONARY, NEW WATERBURY-FARREL MACHINE SLOTS 500 TO 2000 FINISHED BLANKS PER MINUTE

Unprecedented Saw Life Per Grind

This new Waterbury-Farrel #1 High Speed Screw Head Slotting Machine uses only one hopper, one dial and one saw to pour out from 500 to 2000 burr-free, slotted blanks per minute.

Capacity  
Slots button, round, flat,

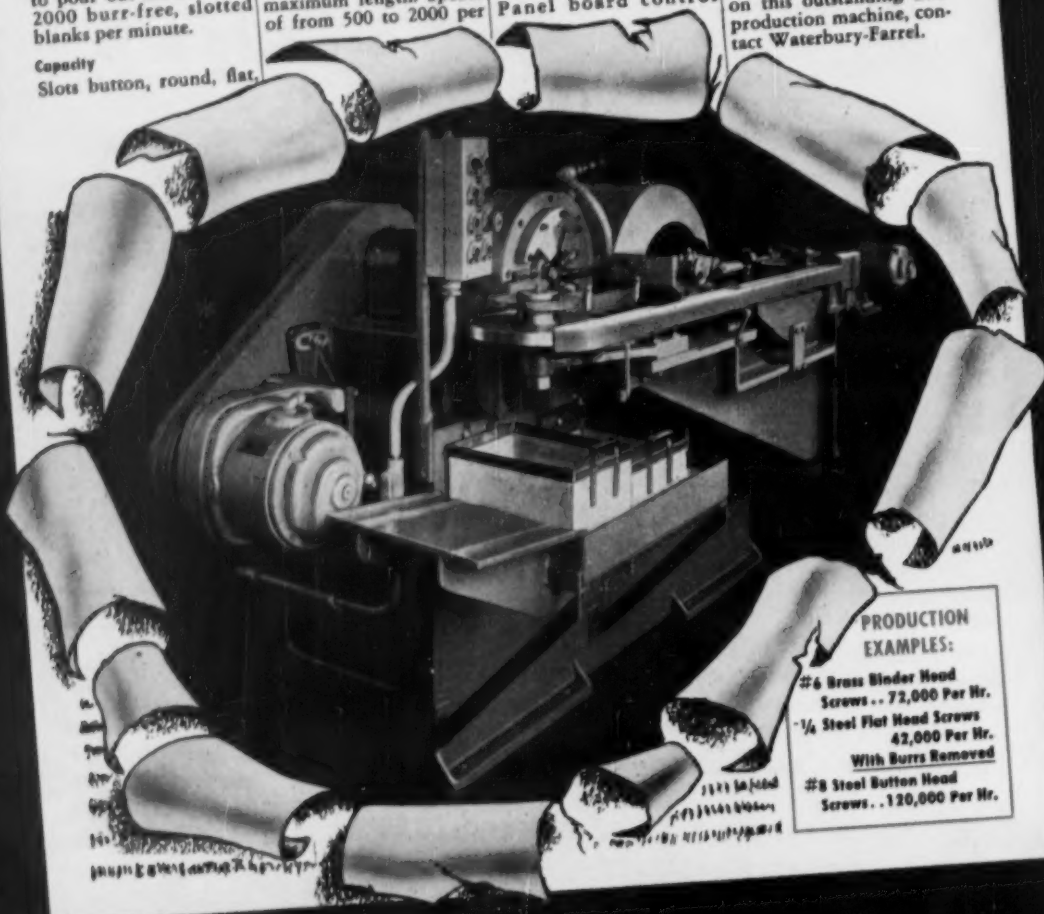
flat oval, fillister, truss or binder heads (of brass or standard lower carbon machine steel), in sizes from #6 by  $\frac{1}{4}$ " minimum length to  $\frac{1}{4}$  by 3" overall maximum length. Speeds of from 500 to 2000 per

min. depend upon shape and size of head and whether steel or brass is used.

Fully Electrically Driven...  
Lubrication Safety Interlocked  
Panel board control

switches are safety interlocked so that oil flow must be started first. Then the saw, dial and feed are each started in that order by separate switches.

For further information on this outstanding new production machine, contact Waterbury-Farrel.



#### PRODUCTION EXAMPLES:

- #6 Brass Binder Head  
Screws .. 72,000 Per Hr.
- $\frac{1}{4}$ " Steel Flat Head Screws  
42,000 Per Hr.  
With Burrs Removed
- #8 Steel Button Head  
Screws .. 120,000 Per Hr.

WATERBURY-FARREL FOUNDRY & MACHINE CO. • WATERBURY, CONN.

Offices: Chicago, Cleveland and Millburn, N. J.

A FEW OF THE MANY TYPES OF METAL WORKING MACHINERY MADE BY WATERBURY-FARREL • COLD PROCESS BOLT AND NUT MACHINERY—Headers (all types) • Re-headers • Trimmers • Thread Rolling Machines • Slotters Nut Tappers, etc. POWER PRESSES—Crank, Cam and Toggle, also Rock and Pinion Presses • Multiple Plunger Presses • Hydraulic Presses, etc. MILL MACHINERY—Rolling Mills • Wire Flattening Mills • Chain Draw Benches • Slitters and various accessory mill machinery. WIRE MILL EQUIPMENT—Continuous Fine Wire Drawing Machines (Upright Cone and Tandem) • Bulb Blocks • String-up Machines • Spoolers, etc.



WF 3



# Eriez Permanent Magnets

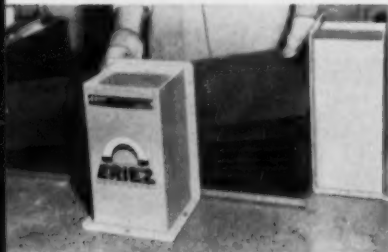
## to CONVEY . . . HOLD . . . CONTROL

### offer new automation advantages

● A revolutionary new concept in steel conveying and controlling is now possible through the use of Eriez Permanent Non-electric Magnets. Famous for years as magnetic separators to remove tramp iron from processing lines of all kinds, the introduction of these magnets into the metal working industry has offered many new ideas in automation. Powerful enough to stop moving metal, these magnets can also convey pipe, tubes, conduits, sheet metal, etc., at high speeds to maintain peak production. Other advantages include: faster pickup, more positive movement, less conveyor space needed, less product damage caused by slippage and sag, elimination of electric motors, etc. *All Eriez Magnets are non-electric, self-contained. They have no wires or attachments. There is no operating cost; first cost is the last. Powerful Alnico V elements are guaranteed to keep their strength indefinitely.* Write for Big New "MAGNETS FOR METAL WORKING" Bulletin.

## Magnetic ideas from

# ERIEZ



**ERIEZ SHEET FANNER MAGNETS.** Here's the magnet to speed up sheet metal handling and increase production. Slow, costly hand separation is completely eliminated . . . no more double feeding, no scratched surfaces, no cut fingers. An Eriez Sheet Fanner Magnet placed next to a pile of sheet metal *automatically* lifts the top sheet into the air, allows fast, safe removal. When this sheet is removed, the following one automatically rises. Ideal for irregular, odd-shaped sheets. Available in five strengths.



**ERIEZ SMALL-DIAMETER MAGNETIC ROLLS (flat-faced).** These powerful, permanent magnetic rolls are destined to play a major part in plant automation. Installed either singly or in groups, they are used for feeding, conveying and spot control of sheet metal and they assure absolute control during such operations as baking, painting, trimming, etc. They eliminate drifting, untrue cuts, cobbles . . . reduce downtime and rejects. They permit automatic feeding of stock for cutting, punching and shearing operations. Rolls can be coated for special needs, or chrome plated for longer wear. In 2½", 4", 4½" and 5" diameters. Easily installed on present systems.



**ERIEZ CONTROL PLATE MAGNETS (flat-faced).** Designed for installation under fast-moving belts, powerful plate magnets are used to control moving sheets and keep them in proper position during conveying operations. True feeding into machinery is assured, and there's never a chance of flopping or "take-offs." Constant magnetic power prevents sheets from damaging each other, reduces rejects and waste. Available in various sizes and strengths, in widths from 4" through 72", in 2" increments. Readily adaptable to existing conveyor lines.

Eriez "Magnetic Ideas" can help you. Eriez factory-trained field men, backed by extensive laboratory and engineering know-how, will be happy to study your particular metal handling problem and offer helpful "Magnetic Ideas." Our representatives are always glad to work with your engineering department or consulting engineers on any problem, large or small. For additional information concerning magnetic problems in the metal working industry, write for new bulletin B-207. Address Eriez Manufacturing Company, 100R Magnet Drive, Erie, Pennsylvania.



**AND HOLDING ON BY A MAGNET.** There's quite a drop beneath this worker . . . but he's in no danger. He is holding on by a permanent-powered Eriez Magnet. This idea of permanent dependability and herculean power now offers the metal working industry many new ideas for automatic control and conveying of steel. Hundreds of other production problems have also been solved by the use of many types of Eriez Permanent Magnets designed to separate, retrieve and purify.

**ERIEZ V-TYPE MAGNETIC PIPE CONTROL ROLLS.** These V-grooved rolls are used to control and convey pipe from one location to another, either horizontally, vertically or up steep inclines at speeds that permit capacity production. They decrease take away time, make for shorter conveyor lines, and eliminate many direct drive rolls and motors. Positive hold prevents rebound, assures absolute control during all operations such as cut-off, reaming and facing, coupling, threading, and conveying through coating operations. Available for medium and heavy duty.



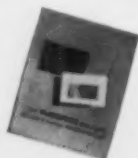
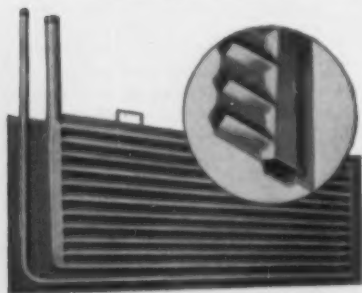
# PLATECOILS®

**cut the cost of acid pickling  
at TUBE TURNS**



**... eliminate live steam injection,  
save space, reduce maintenance**

Heating caustic and rinse tanks for stainless steel pickling and passivating posed a real problem for Tube Turns. Bubbling steam through fluid was unsatisfactory and normal steam (pipe) coils were too bulky and expensive to be used on the job. Since July, 1952, however, Tranter Platecoils have eliminated all the headaches of the job and in the words of a Tube Turns spokesman "have made the job possible." By taking less space, Platecoils have made the closed system of heating possible, giving better control and improving safety. Initial cost was low enough to make installation feasible. Maintenance costs have been nil and efficiency has been improved. Make Platecoil's potential for such a variety of savings work for you. Put Tranter's know-how and experience in servicing thousands of applications to work for you.



Send now for your copy  
of Bulletin No. P73 a  
12-company report on  
uses for Platecoil.

There's no end to the  
savings made with  
Platecoils®

- \*Most manufacturers find they can buy and install Platecoils for less than they can fabricate pipe coils.
- \*Platecoils can be installed in open tanks in 30 minutes or less by one man and a helper.
- \*Platecoils have no threaded joints to corrode or leak. Both connections can be located outside of the solution.
- \*Experience has proven deposits form less readily on Platecoils. Where cleaning is necessary, the units are removed and replaced quickly.
- \*Lighter weight means Platecoils can be moved and installed without overhead hoists.



## PLATECOILS cure Coil-itis

They eliminate the constant doctoring required for pipe coils in wet processing tanks.



**PLATECOIL** Div. TRANTER MANUFACTURING, inc., Lansing 4, Michigan

# Flex-Roll Processing



## Absolutely Essential FOR BETTER DEEP DRAWS

THE Automotive and Appliance industries have long been aware of product improvement due to Flex Roll Processing. Low carbon steel as supplied by the steel mills for deep drawn parts, requires a cold working prior to the press operation, to eliminate stretcher strain, improve surface appearance and minimize scrap losses. The new McKay Flex Roll Processor combines thorough cleaning with efficient filtering of cleaning fluid and effective cold

working of the steel sheet to prepare it for severe deep draws.

McKay engineers will appreciate the opportunity of demonstrating the benefits of Flex Roll Processing.



*The compact, neat new McKay Flex Roll unit that requires no special installation. Just set it in place, plug it in and it's ready to go to work.*

**THE MCKAY MACHINE COMPANY**  
YOUNGSTOWN, OHIO

**MCK**

... IF IT'S A HIGH PRODUCTION PROBLEM ...

ASK



BAIRD

ABOUT IT



It's  
**"GOOD FORM"**

TO MAKE YOUR **RIBBON METAL PARTS**  
ON THE **BAIRD AUTOMATIC**

After completion of the tooling setup and adjustment of the several mechanisms, you merely start the machine for fully automatic production.

Baird standard automatic Four-Slide Ribbon Metal Forming Machines are capable of producing thousands of shapes and sizes of products and components. In addition, various accessories, attachments, and special cams extend production possibilities to an uncountable quantity. The machine may be arranged to handle round wire if required.

Speed is the low-cost factor; smooth, reliable operation is another; also, easy access to tooling and inspection of work.

The story in detail is too long to present in this space, so you will want full particulars. This is the one machine you need to give you unusually fast and accurate production. "Ask Baird about it." Write Dept. IA-4.

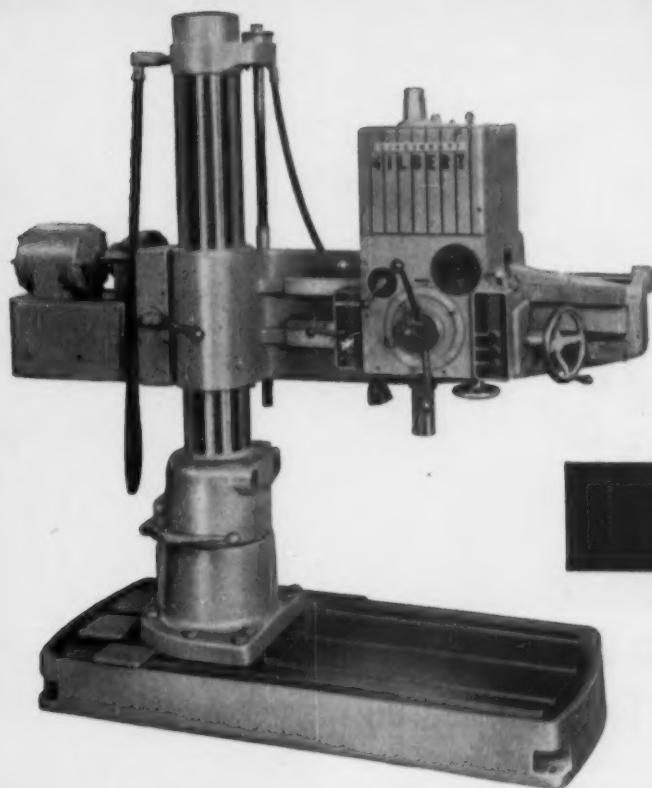
**THE BAIRD MACHINE COMPANY**  
STRATFORD CONNECTICUT

WHERE YOU WILL GET THE HELP OF SPECIALISTS  
ON THESE ESSENTIAL PRODUCTION PROBLEMS:

AUTOMATIC MACHINE TOOLS • AUTOMATIC WIRE & RIBBON METAL  
FORMING MACHINES • AUTOMATIC PRESS • TURNING BARRELS

18455





**NEW**

- 9" column; 3' or 4' arm
- spindle speed ratio of 40-to-1
- 12 speeds (up to 3200 rpm) through direct-reading dial
  - automatic tapping reverse
  - adjustable spring counterbalance (feel remains the same from lightest to heaviest tools)
  - hardened tang slot
- safety elevating nut and screw (arm can't drop or overrun)
- rigid, accurate spindle mounted on 5 precision ball bearings

This completely new light duty 3 HP radial gives you more advances for your money than any machine of equal capacity, at a price that makes replacement easy and attractive. At the left are some of the features that put you ahead when you own this Gilbert. Your replacement dollar is worth more when you buy a Gilbert. Write for Bulletin Number 255.

The Cincinnati Gilbert Machine Tool Co.,  
3366 Beekman St., Cincinnati 23, Ohio

*those who buy Gilbert buy* **GILBERT** *again*

# FLOATING GEARMOTOR

MOUNTS ON THE SHAFT

## eliminates: Base Plates, Couplings Line Shaft and External Gearing

The Philadelphia "Floating" GearMotor is a new concept for powering steel mill roll tables, conveyors, textile machines and many other industrial drives. This motorized worm gear reducer mounts directly on the driven shaft, and requires no mounting provisions other than a simple torque arm . . . the GearMotor is supported by the same bearings as the drive shaft, thus the power unit is reduced to its simplest form.

Because the Unit actually "floats" with the driven shaft, there is no problem in providing for and maintaining alignment . . . the power unit and the driven shaft become a simple integral unit.

The "Floating" GearMotor can be mounted in almost any location, and the use of right angle worm gearing permits the GearMotor to nestle close to the driven machine, thus saving valuable floor and aisle space. Also, special design and sealing features make it possible to mount it in any desired position — motor horizontal, vertical up or down.

The "Floating" GearMotor is manufactured in both single and double gear reductions offering a wide range of out-put speeds from 9 to 420 rpm. Motors are available in almost any required combination of electrical characteristics ranging in size from 1 to 15 horsepower.

Proof of the outstanding performance and reliability of the "Floating" GearMotor lies in the many successful installations throughout the United States and Canada.

Send for Catalog F-54, and be convinced.

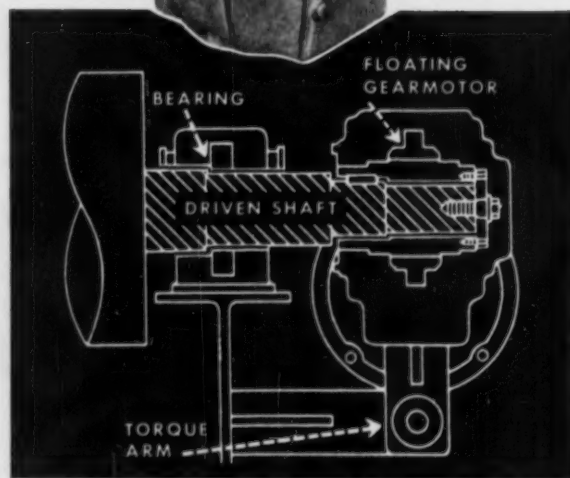


Illustration shows simplicity of assembly and mounting of the "Floating" GearMotor in the motor-horizontal position. GearMotor and driven shaft are supported on same set of bearings.

Note compactness of the installation.

### PHILADELPHIA GEAR WORKS, INC.

ERIE AVE. & Q ST., PHILADELPHIA 34, PA.  
NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA.  
Virginia Gear & Machine Corp. • Lynchburg, Va.



Industrial Gears & Speed Reducers

LimitTorque Valve Controls

Established 1892

*Musk Ox*  
OVIBOS MOSCHATUS



## *Weatherproof*

**One of the most weatherproof of creatures** in the world is the Musk Ox. In spite of the savage climate of their habitat (the tundra which rings the north polar sea), Musk Oxen do not migrate or hibernate, often pass their entire lives within a radius of a hundred miles.

A long, thick "overcoat" of hair protects the Musk Ox from the severe storms of winter and the ferocious flies of summer. A deep pad of wool next to his skin insulates him from the intense cold.

**One of the most weatherproof of metals** is aluminum. A tough oxide coating which forms

naturally on an exposed aluminum surface is actually a weatherproof protection. It makes aluminum highly immune to the weathering and corrosive attacks of the elements which eat away other construction materials. Air and moisture do not affect the underlying metal.

Weatherproof, light and strong, aluminum is a versatile metal which is being used in the making of more and better products every day.

Aluminium Limited Sales, Inc. is the distributor in the United States for ALCAN aluminum from Canada. Why not investigate making your products of aluminum?



## *Weatherproof*

**In Farm, Residential and Commercial Buildings** more and more aluminum is being used for its weatherproof superiority as well as its lightweight and high-strength advantages.

**Aluminum**  
*from Canada*

**Aluminium Limited Sales, INC.**  
630 FIFTH AVENUE • NEW YORK 20, N. Y.

CLEVELAND • CHICAGO • DETROIT • LOS ANGELES • BUENOS AIRES • SÃO PAULO

April 28, 1955

# HYDRAULIC DANGER ZONE

Ordinary hydraulic fluid, escaping under pressure, can start a fire 40 ft. or more away from a broken line! Is your plant safe? Here's how one firm protects men and machines inside the danger zone...



## PYDRAUL INCREASES SAFETY, EFFICIENCY OF NEW 1900° FURNACE

MIDWEST PIPING COMPANY, INC., ST. LOUIS, designed two pipe-bending furnaces with hydraulic doors to replace dangerous levers. But the system created a problem: If 800 psi hydraulic lines were ruptured by falling brick or pipe, escaping fluid would explode immediately in 1900° F. furnace! Midwest investigated, then solved the problem by installing fire-resistant Pydraul fluid in all hydraulic lines. Result: Operators are safer... danger of hydraulic fires is eliminated... excellent lubricity of Pydraul has increased operating efficiency.

*Pydraul: Reg. U. S. Pat. Off.*

### FIRE RESISTANT

In tests and actual service, Pydraul has been discharged over molten metal, red-hot ingots, arcs, open flame and sparks without fluid igniting... even at temperatures up to 6000° F!

### ...AND A TOP-GRADE LUBRICANT

After 200-hr. Vickers Vane Pump Test, pump rotor operated on petroleum fluid showed weight loss of 2.9 grams due to wear. Rotor with Pydraul lost no weight—lost only 0.1 gram after 800 hrs! Timken Lubricant Test and Almen Wear Test also show Pydraul excellent in lubrication characteristics.

### PLUS...

HIGH STABILITY  
LOW MAKE-UP RATE  
CONTAINS NO WATER  
NON-CORROSIVE  
RE-USABLE



### FREE BOOKLET

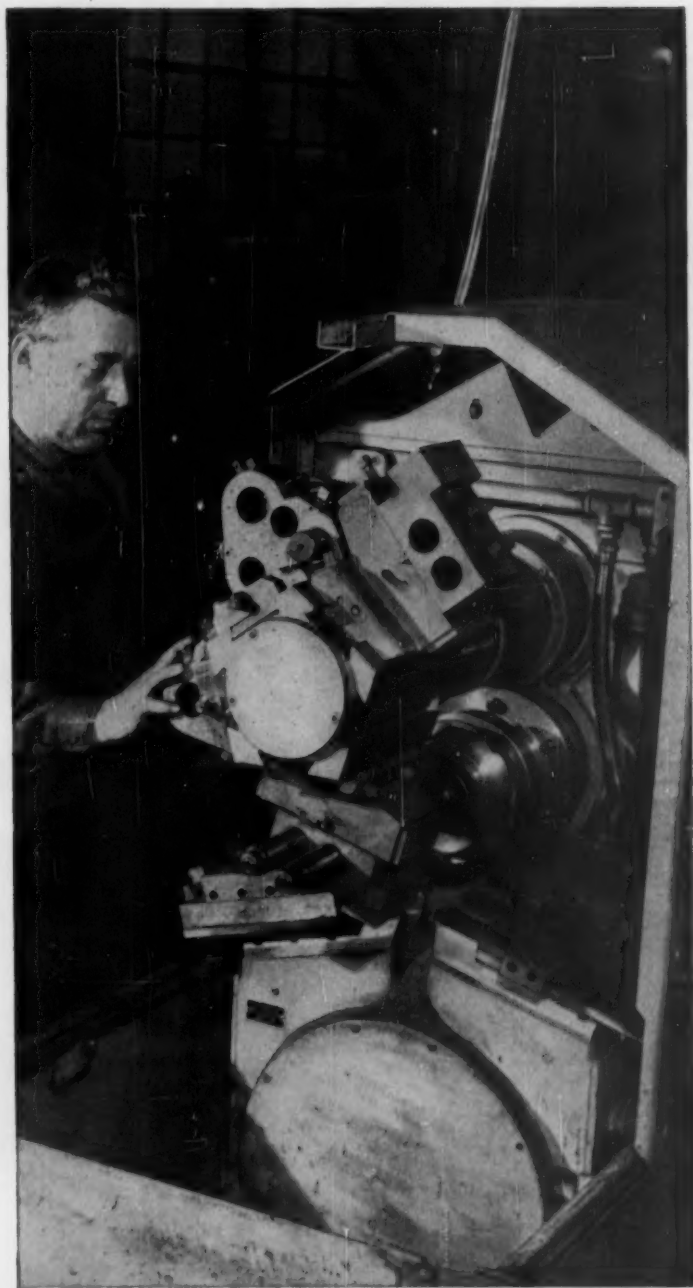
Write now for new free booklet, "PYDRAUL F-9."

Organic Chemicals Division,  
MONSANTO CHEMICAL COMPANY, Box 478 G-4, St. Louis 1, Missouri.



Serving Industry... Which Serves Mankind





## When Precision was the Pay-Off!

**H**ALEY MACHINE COMPANY, Springfield, Ohio, installed a Warner & Swasey 1 AC Single Spindle Automatic Chucking Machine to turn vital, high-precision hydraulic pump parts for U. S. Army tanks. The job called for extreme accuracy, because these pumps are filled under pressure with an exceptionally light oil.

To avoid leakage these extremely close tolerances had to be held—40 to 63 micro-inch finish on surface finishes, .002" on forming, .0008" to .001" on turning, and .001" in concentricity. Maintaining such accuracy with previous methods was difficult—scrap loss was too high. Production had to be speeded up.

The new Warner & Swasey took the function of holding these close tolerances out of the operator's hands—substituting the automatic operation of this high-precision machine for the job. Production was doubled—in some cases tripled! Scrap loss was reduced 12 to 15%.

This type of consistent accuracy is just not possible by manual methods due to the human error of even the best machinists. It is even unusual for an automatic. But the Warner & Swasey 1 AC has the rigidity, the built-in accuracy, plus the ability to repeat accurate settings to handle the most difficult jobs!



1 AC CHUCKING MACHINE  
8" or 10" Chuck—6" Working Stroke

2 AC CHUCKING MACHINE  
10" or 12" Chuck—9" Working Stroke

**WARNER  
&  
SWASEY**  
*Cleveland*  
PRECISION  
MACHINERY  
SINCE 1880

**YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS... WITH A WARNER & SWASEY**

April 28, 1955

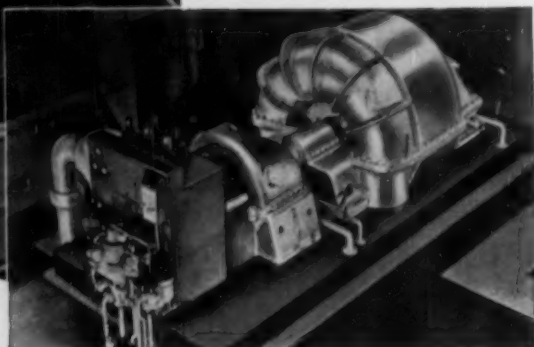
37

# What type BLOWER



Typical centrifugal blower with upper half of casing removed.

75,000-cfm, 30-psig blast furnace blower.



*Under 100,000 cfm*  


---

*Over 100,000 cfm*



Typical axial compressor of blast furnace size.

Blast furnace type axial compressor with upper half of casing removed.

# ALLIS-

# for your steel mill?

As requirements move above 100,000 cfm, axial compressor may replace centrifugal blower because of higher efficiency and lower operating cost. Allis-Chalmers experience with both types assures you of sound recommendations.

Battling rising costs, blast furnace designers have sought increased economy through larger blast furnaces. Air requirements of the new units have risen rapidly and have now reached the point where the centrifugal blower is not always the most efficient and economical unit. These are some of the design and operating factors that influence the choice of the best blower for the job:

**EFFICIENCY** — The axial compressor is inherently more efficient than the centrifugal blower. This is due largely to the fact that the air passing through the centrifugal blower follows a complicated air path, with sharp turns passing from one stage to the next. In an axial compressor, the air path is more nearly a straight line and losses from sharp turns in the air path are avoided.

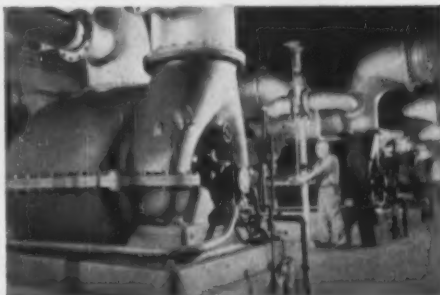
**DRIVE UNIT** — At 100,000 cfm and above, the speed of a centrifugal blower has dropped below 3600 rpm, while the speed of a comparable axial compressor is approaching 3600 rpm. This difference becomes more pronounced as units get larger. Since the optimum speed of either a turbine or motor drive is about 3600 rpm, the centrifugal makes best use of the drive in smaller sizes, while the axial makes best use of the drive in larger sizes.

**SIZE** — In all sizes the axial compressor is smaller than a centrifugal blower of the same rating. This means less floor space, smaller foundations, reduced costs.

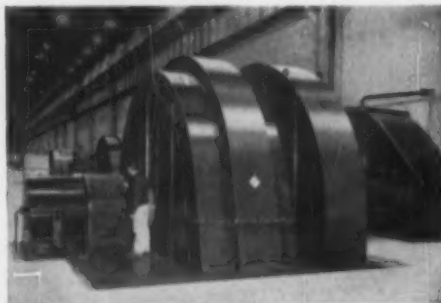
## Unbiased Analysis and Recommendations

Since Allis-Chalmers has had wide experience in building both centrifugal and axial types, your Allis-Chalmers representative can help you with your blower problems. Call your nearby Allis-Chalmers District Office or write Allis-Chalmers, Milwaukee 1, Wisconsin.

## Other Allis-Chalmers Steel Mill Equipment



**Coke Oven Blowers** . . . both axial and centrifugal types for booster or exhauster service. Photo shows four 23,000-cfm, 5100-rpm, 35-psig exhausting blowers in western steel mill.



**Motors** . . . all types of ac and dc steel mill motors. The 3500-hp wound-rotor motor shown is used in conjunction with four 6000-hp synchronous motors driving roughing stands of 80-inch hot-strip mill.

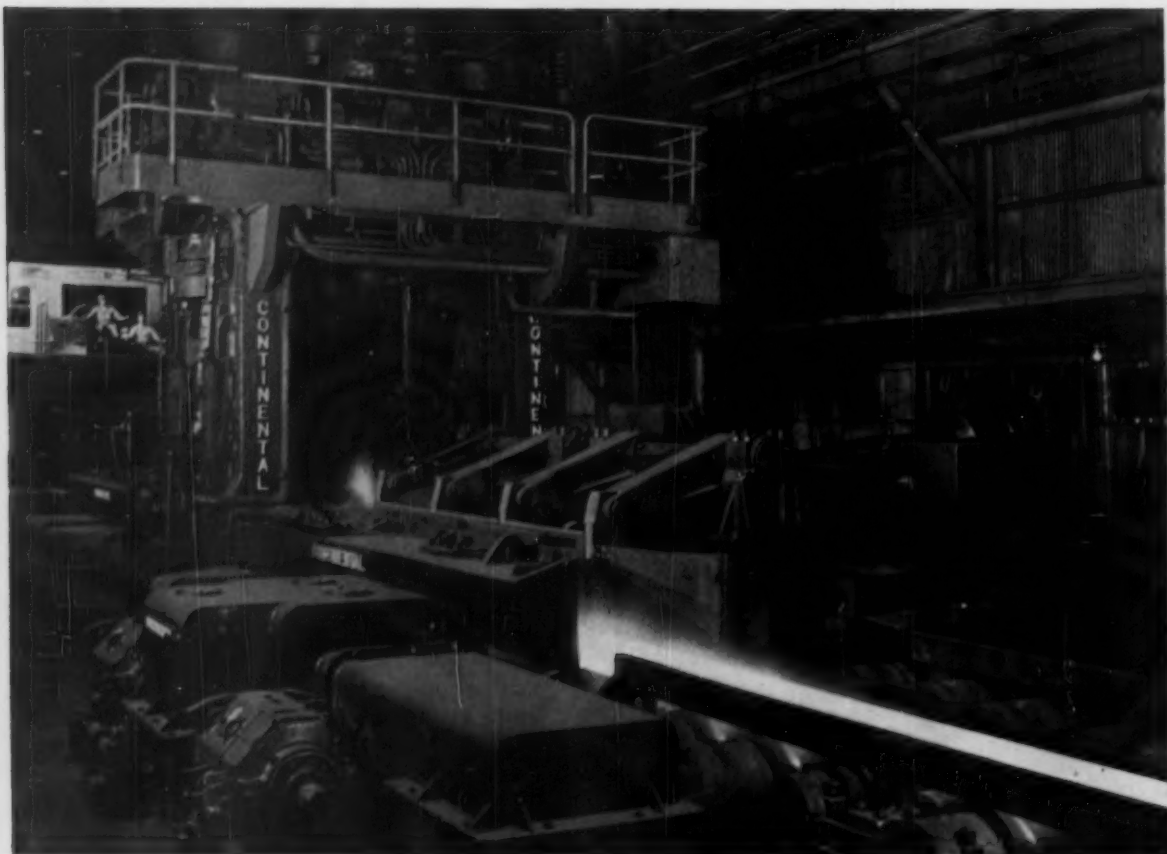


**Electric Power Equipment** . . . steam turbine-generator units, transformers, switchgear, circuit breakers, rectifiers, control. Shown is a 33,000-kw steam turbine-generator unit with hydrogen-cooled generator supplying power in a modern eastern steel mill.

# CHALMERS

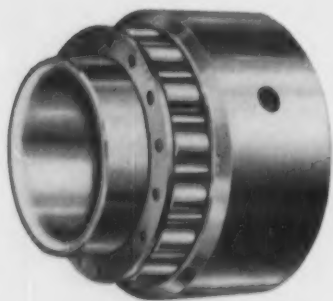


A-4611



## 235 HYATTS GET AN EXTRA-ROUGH "WORKING OVER"

**in this "dual-duty" Continental Mill**



Experienced steel men can see at a glance that this big bruiser is a 40-inch blooming and slabbing mill—and a beauty. But that's only *half* the story!

It was originally intended for intermediate rolling of blooms and slabs for further rolling in the continuous billet mill. But when it was pressed into service from necessity, it did a whale of a job of rolling from ingots to slabs in the hot strip mill!

That's why we're extra-proud of the performance of the 235 Hyatt Roller Bearings in main tables, furnace tables, feed rollers, auxiliary rollers and lineshafts of this versatile mill. Here's proof again that in the long run, the *best* bearings you can buy are the most economical—HYATTS!

# HYATT

**ROLLER BEARINGS**

STRAIGHT 

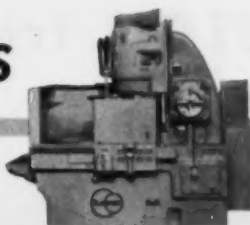
BARREL 

TAPER 

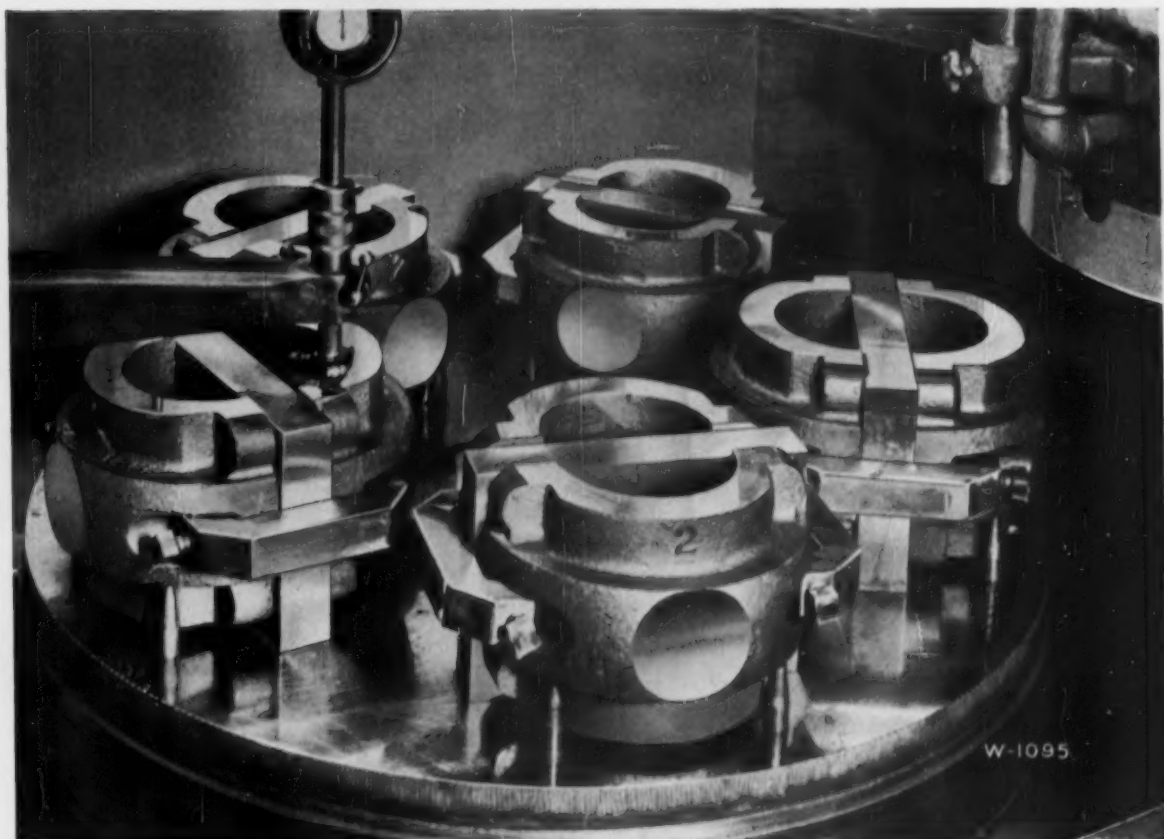
HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY



IT PAYS



TO PUT IT ON A BLANCHARD



The first operation on these cast steel (1504) bearings is to Blanchard grind the parting line to establish locating surfaces.

Then, a No. 18 Blanchard Surface Grinder (shown above), with 36" magnetic chuck, rough grinds the end faces of all five sets in 17 minutes—at an abrasive cost of only 2¢ per piece! This operation provides locating surfaces for additional machining. By using the correct Blanchard wheel\* and proper rate of down feed, the wheel dresses itself and removes three cubic inches of cast steel per minute.

The final Blanchard operations include finish grinding both end faces—removing .015" of stock from each end, flat and parallel to  $\pm .001"$ . Each surface is ground in 17 seconds, fourteen pieces to a load, located directly on the magnetic chuck.

*\*Blanchard Grinders perform best with Blanchard Wheels!*

Send for your free copies of  
"Work Done on the Blanchard",  
fourth edition, and "The Art of  
Blanchard Surface Grinding".



PUT IT ON THE



THE BLANCHARD MACHINE COMPANY

64 STATE ST., CAMBRIDGE 39, MASS., U.S.A.

April 28, 1955

Key to **FASTER PRODUCTION** from your  
Two-High Reversing Mills . . .



**BIRDSBORO**

*alloy  
steel rolls*



*Designers and Builders of:*

STEEL MILL MACHINERY

HYDRAULIC PRESSES

CRUSHING MACHINERY

SPECIAL MACHINERY

STEEL CASTINGS

Weldments "CAST-WELD" Design

ROLLS: Steel, Alloy Iron, Alloy Steel

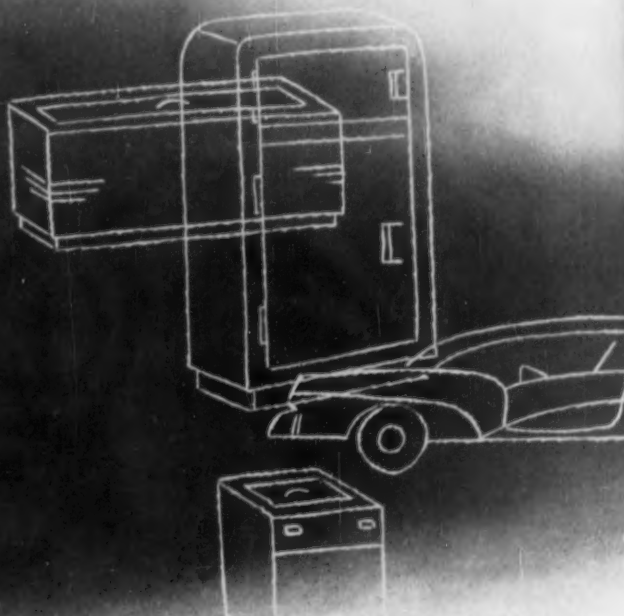
Gear your production to the outstanding performance of Birdsboro Alloy Steel Rolls . . . and see what a profitable difference it makes. Birdsboro is a recognized leader in designing and building both rolls and two-high reversing mills. That's why it pays to call in a Birdsboro roll specialist.

R13-55

**BIRDSBORO**

BIRDSBORO STEEL FOUNDRY & MACHINE CO., BIRDSBORO, PENNA. Offices in Birdsboro, Pa. and Pittsburgh, Pa.

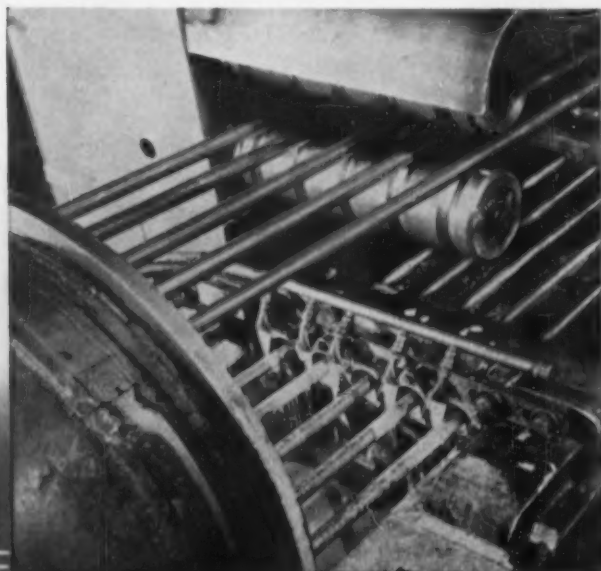
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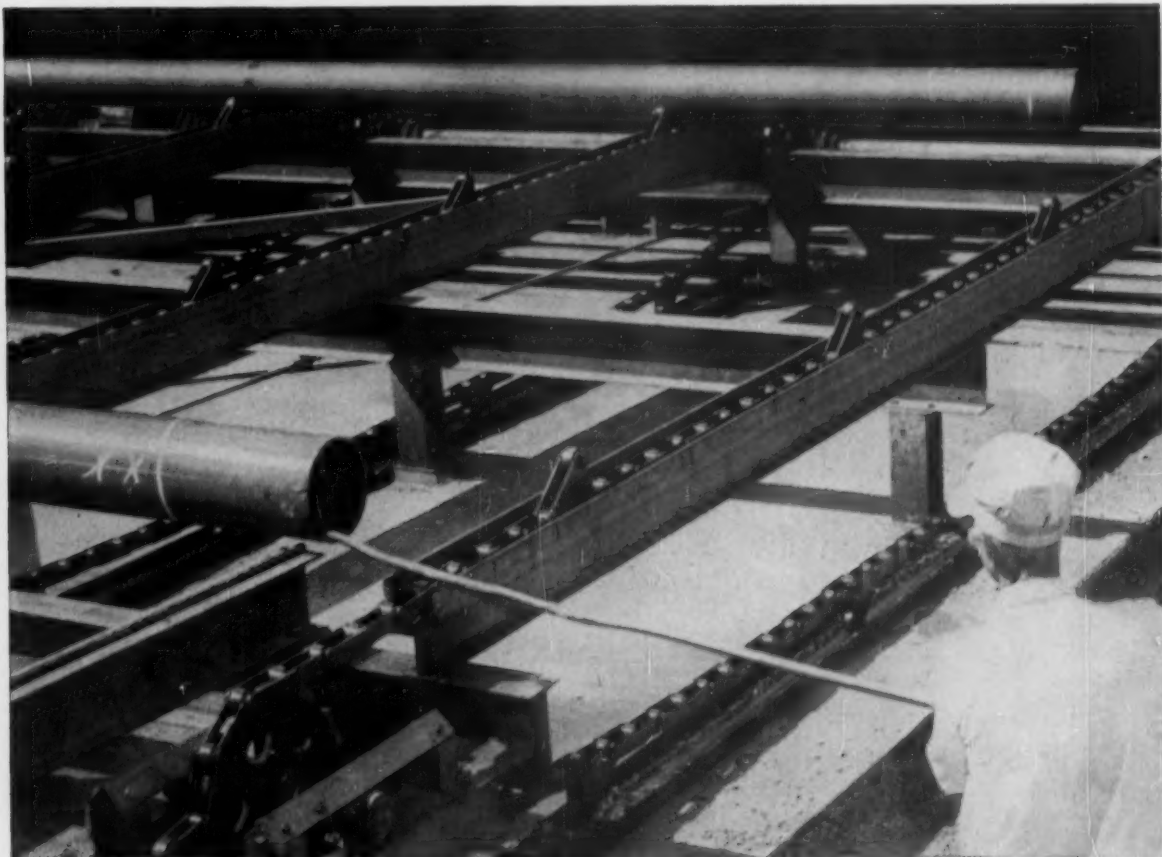


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Transfer conveyor from inspection to cut-off at steel pipe mill uses Link-Belt LXS chain with attachments to move the heavy pipe smoothly.

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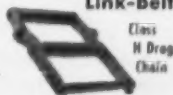
And the story's the same for every drive and conveyor requirement—you'll find the chain that's *best* for the job in the complete Link-Belt

line. No other single source can equal Link-Belt's broad range of roller and silent chain . . . of cast, combination, forged and fabricated types.

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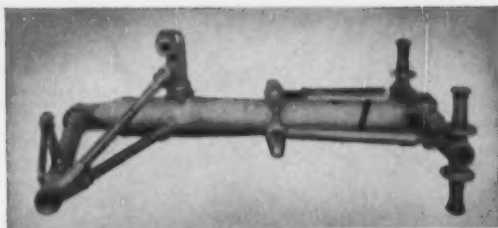
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City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

## 2 Stainless Parts...



**made to the same specs...  
but what a difference!**

### Tool life increases 33%

This shaft winds the main spring that powers parking meter clocks. When produced from ordinary Type 303 Stainless, machinability was a constant problem... tool life was short. Then the company made just *one* change—to Carpenter Stainless No. 8 (Type 303). Now machines run  $\frac{1}{3}$  longer before tools have to be removed for resharpening.

### Unit costs go down

In addition to the savings gained by longer tool life, the uniform, free-machining qualities of Carpenter No. 8 (Type 303) have helped make this job more economical. Now, material can be run at a higher speed. Close tolerances are more easily held.

### Top corrosion resistance obtained

Although machinability was the prime factor for changing to Carpenter No. 8, the shaft had to be corrosion resistant to provide dependable performance when exposed to varying atmospheres in all parts of the country. And Carpenter Stainless No. 8 assured this property.

This is just one example where the difference in Carpenter *quality* and dependability pays off. It's a difference that can add up to speed, performance and profits right in your own plant. See for yourself—specify Carpenter on your next order for Free-Machining Stainless. THE CARPENTER STEEL CO., 121 W. Bern St., Reading, Pa.

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Free-Machining Stainless



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Export Department: The Carpenter Steel Co., Port Washington, N.Y.—"CARSTEELCO"



# Reinforcing Rod Plant UPS PRODUCTION 300%

## Cleveland Tramrail System Pays For Itself In 6 Months

**A**FTER a reinforcing rod plant built a new building and equipped it with Cleveland Tramrail cranes, manufacturing costs took such a nose dive that they would make any cost-conscious plant manager blink with amazement.

Whereas eight men were required to work 8 hours to unload a 50-ton car of rods in the old building, two men using Tramrail cranes now do the job in 30 minutes. The Tramrail equipment has enabled doubling the production, and at the same time reducing man-hours by one-half. In other words, the produc-

tion per man-hour is four times what it formerly was.

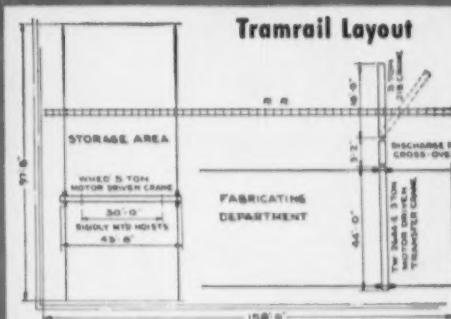
The savings have been so phenomenal that the entire Tramrail system was paid for in the first six months of operation.

Nearly every industry is securing important advantages with Cleveland Tramrail equipment. A nearby Tramrail sales engineer will gladly suggest ways that savings can be made in your plant.



5-ton crane handles 60'-0" long bundles of rod from railroad car to storage and to shear.

Outgoing truck is quickly loaded with 3-ton crane.



Note that 3-ton loads can be handled directly between jib crane and 3-ton transfer crane.

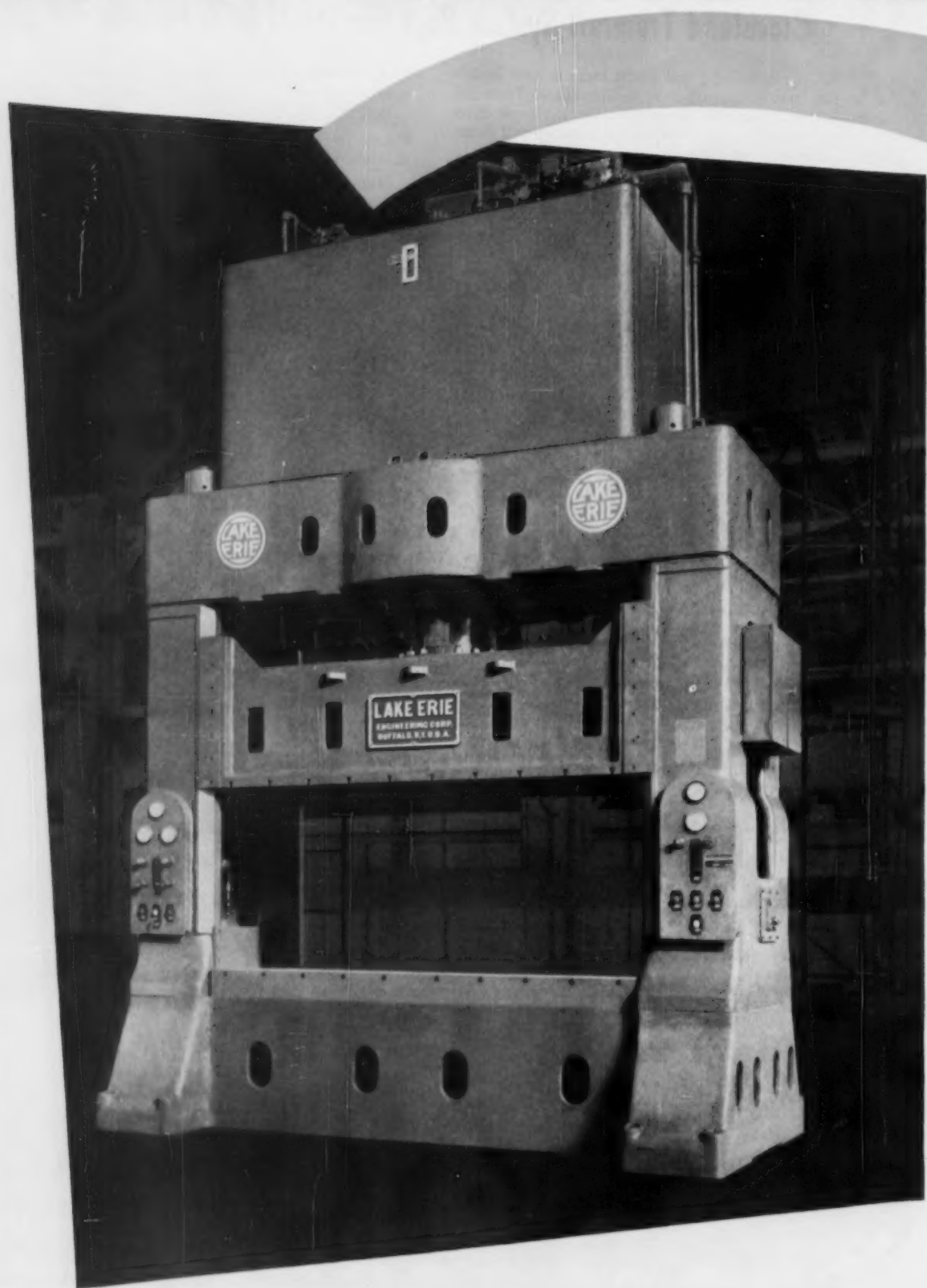


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**UNUSUALLY RUGGED SIDE HOUSINGS**...increase frame rigidity.

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**SIMPLIFIED ELECTRICAL SYSTEM**...designed for maximum safety and ease of maintenance.

**BRONZE USED EXTENSIVELY**...bronze throat bushings provide better guiding.

...bronze piston heads, gland bushings, and pre-fill valve disc prevent scoring.

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GUIDE ➡

PRESS APPLICATIONS		PRESS TIMES									
Model	Capacity	1	2	3	4	5	6	7	8	9	10
1000	1000	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9
2000	2000	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2
3000	3000	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5
4000	4000	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8
5000	5000	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8	5.1
6000	6000	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8	5.1	5.4
7000	7000	3.0	3.3	3.6	3.9	4.2	4.5	4.8	5.1	5.4	5.7
8000	8000	3.3	3.6	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6.0
9000	9000	3.6	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6.0	6.3
10000	10000	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6.0	6.3	6.6



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## The Iron Age Newsfront

### Molybdenum: Corrosion Inhibitor

Several companies are investigating use of molybdenum as a corrosion inhibitor in water treatment. It is non-toxic, colorless. Present studies indicate cost will be comparable with other inhibitors in treatment systems.

## Dry-cuts Rails In 45 Seconds

Railroad construction for the Army will be speeded by a new motor-driven rail cutter. Equipped with an abrasive cutting wheel, it handles two standard rails simultaneously and can dry-cut each in less than 45 seconds.

### Armor: Titanium Would Save Weight

Although use of titanium alloys as armor is still experimental, enough progress has been made to suggest future use of titanium in place of rolled, homogeneous armor on an equal thickness basis. This would save 40 pct in armor weight.

### Higher Efficiency for Steam

An attempt is under way on the West Coast to use steam pressures at 2500 lb with 1000° F temperature in tractor applications. Aim is to achieve high efficiency of energy conversion and provide an infinite torque arrangement without the necessity of expensive intermediate transmission devices.

## Meters Conserve Water Supply

Low water supply in many U. S. areas is generating a swing to metering as a conservation measure. Some authorities predict every urban home in the country will be equipped with a water meter by 1960. Per capita water consumption has been substantially cut in cities where meters have been installed.

### More Emphasis on Bessemer

Recent trend in new European steelmaking capacity puts the stress on bessemer units rather than openhearth or electric. This shift may only be temporary, but some sources believe it's caused by the shortage of scrap in Europe, higher price of openhearth steels and growing interest in the oxygen-bessemer steelmaking process.

## Improved Bolts Offer Advantages

Popularity of high tensile strength bolts in fabrication of steel is growing. Offering advantages in both erection and maintenance of structures, they will be used exclusively in a new bridge now being planned.

### Ford Reaches Brass Tacks First

Auto labor talks are moving ahead faster at Ford than at GM. Reason: GM is splitting its negotiation week between the UAW and the IUE, whose contract is also up for negotiation. Also, Ford received its GAW package days ahead of GM, is ready to start actual negotiation.

### Modified GAW Seems Likely

It looks like labor will win its guaranteed annual wage demand in one form or another. Economic conditions are ripe for a compromise on this issue. Automotive business is good, and neither management nor labor wants a strike. A GAW in "modified" form seems likely.

## Midwest Scrap Exports No Problem

Export of scrap from Midwest is not expected to have much effect on U. S. scrap consumers. Freighters serving Great Lakes have limited capacity and high (\$20 to \$25 per gross ton fob a European port) rates compared to East Coast rates (\$10 to \$15).

**LIKE SPECTACULAR  
COST CUTTING  
MACHINERY . . .**

that consolidates production operations in a single machine to speed up production and eliminate wasteful handling



## **CMP** *cold rolled strip steel...*

### **can help step up your production rate**

By working to restricted specifications for size, physical characteristics and finish, realized through precision cold rolling and heat treating processes, CMP can help in many ways to step up the production of parts made from flat rolled steel.

In many cases, "working qualities" can be so improved that machine speeds can be stepped up as much as 25%.

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In some instances, restricted specifications may be developed which completely eliminate operations.

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## GAW: Get Ready To Live With It

**Guaranteed wage in "modified" form seen emerging from Detroit . . . talks . . . Industry faces plenty of headaches . . . Quest for stability important to outcome . . . Effect on business discussed—By J. B. Delaney**

♦ **LABOR'S DEMAND** for the guaranteed annual wage has been kicked around from coast-to-coast for months. The battleground is Detroit. It could just as well be Pittsburgh or Chicago. The outcome will affect all industry.

Qualified observers of the labor scene, sifting out the bombast and the window dressing, believe that GAW in "modified" form will emerge from the Detroit talks.

**Their reasoning:**

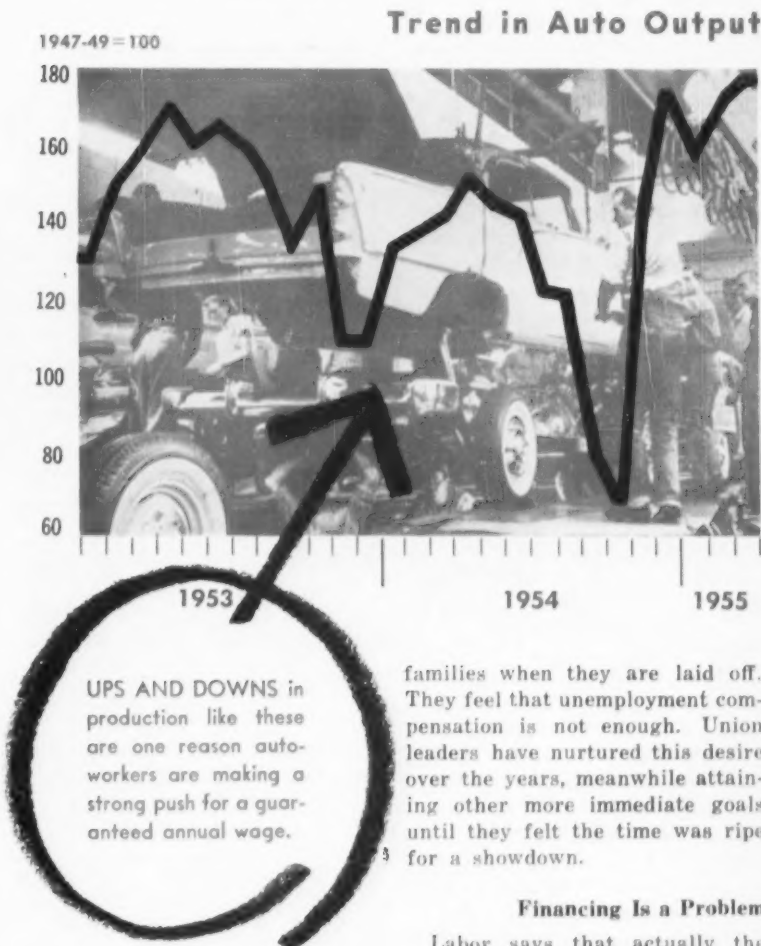
Management, labor, and government have been chasing the elusive goal of stability in production, employment and labor relations for years. GAW is labor's candidate to achieve stability in employment. And it feels it is in position to force the issue. Both labor and management will lean over backwards to avoid a knock-down drag-out fight. This industry-labor yearning for continuing peaceful relations is the key to outcome of the GAW negotiations.

### Two-Way Compromise

Here's the picture:

The automotive industry wants stability and labor peace. It has enjoyed 7 years of relatively undisturbed labor relations. It wants to maintain that good record. Another reason: Automotive business is going at a terrific pace and prospect for the future is solid. Automakers will settle for a compromise on GAW.

The United Autoworkers (CIO) are in dead earnest on GAW this year. But union leaders also want to avoid a strike. While they have laid specific demands before the industry, they realize that their



program is subject to collective bargaining. They will be happy to accept a "modified" GAW. Walter Reuther, UAW president, is willing to dicker.

What's behind the drive for a guaranteed wage?

Basically, it's the desire of workers for continuity of income to support themselves and their

families when they are laid off. They feel that unemployment compensation is not enough. Union leaders have nurtured this desire over the years, meanwhile attaining other more immediate goals until they felt the time was ripe for a showdown.

### Financing Is a Problem

Labor says that actually the major principle of GAW was established by supplements to old age pensions (Social Security) in the form of non-contributory pension programs. It took a strike in steel to establish it. Many industries today have such programs.

The corollary is that all states have unemployment compensation programs. Couldn't supplemental payments by industry to state un-

## SPECIAL REPORT

employment benefits received by their workers be labeled "Guaranteed Wage"?

How will it be financed? This may be a clue:

The United Mine Workers collect a 40-cent royalty for each ton of coal produced in a UMW-organized mine. This goes into the union's so-called welfare fund. It started out at 5¢ per ton, was increased in subsequent contract negotiations. The musicians' union collects a royalty on recordings through the Music Performance Trust Fund.

One union official suggests that major auto companies could support an unemployment plan funded by a "tax" on its payroll or by a royalty on each car produced.

Whatever the answer, GAW is something for industry to reckon with.

### Effect on Business

What should industrial management do about it? Here are some suggestions:

(1) Take a positive approach. The best guarantee against heavy payments to unemployed workers is steady production. Is there a way to level out the peaks and valleys in your company's production and sales?

(2) Pick the brains of your management team. Is diversification the answer? Is your sales effort producing as it should? Where does advertising fit into the picture? Is it possible to warehouse production in time of slow demand?

(3) Review your employment policy. Would you be better off paying overtime to your existing work force when times are good? Or would it be best to hire additional workers? Are you utilizing your work force to best advantage?

How will GAW affect your business?

- It will impose a premium on better planning.
- It may force you to increase your prices to offset the cost of (1) building up a reserve fund or (2) paying idle workers out of current earnings.

Cost will depend on terms of the program. The Office of War

Mobilization & Reconversion analyzed 42 companies to determine the cost for idle time during the years 1937 to 1941. Conclusion: Even where out-of-pocket costs for idle time would have been 20 to 30 pct of actual payrolls, a combination of terms in a guarantee can be devised to reduce the costs to less than 6 pct on the average and provide security for workers.

- GAW may force you to diversify, which in turn might necessitate hiring workers equipped with new skills.
- You may have to drop minor, unstable items from your product list.
- You may benefit from improved worker efficiency. Some companies which have had plans in operation report a significant improvement in labor relations.
- You may have to examine new business on the basis of whether it will develop into a bread-and-butter account, particularly if it means hiring new workers who would earn credit for GAW payments.
- You will have to pinpoint your advertising and sales effort toward overcoming seasonal fluctuations.
- You will have to take another look at your production setup. Is there some way to reduce your unit costs through realignment of existing equipment or through purchase of new machines?

### Labor View

Once established in automotive, GAW would spread to other industries. Steel labor has a plan of its own. So have the electrical workers. All organized labor would climb on the bandwagon. They would want something as good or better than what the auto-workers get.

Most labor leaders say this would be good because every worker could look forward to a guaranteed income covering the period he has earned a right to GAW. Wage earners, according to union officials, would thus be able to plan ahead; they would buy more and add to the prosperity of industry; living standards would rise; the nation's health and wealth would improve.



STRIKE violence like this at Sperry Gyroscope is just a memory in many industries. Quest for labor stability is making progress.



But GAW may not work out that simply. The Latimer Report on Guaranteed Wages warns that it would be tragic to undertake an ambitious program of guaranteed wages "without at the same time instituting other more important programs of government and business designed to promote high and stable levels of production, income, and employment."

"While it is conceivable," says the report, "that an ambitious program of universal wage guarantees would diminish the intensity of minor fluctuations, such as occurred in 1924, and 1927, there is danger that it might be financed in a manner that would intensify such deep and cumulative recessions as that of 1929. . . . If other governmental measures were not instituted to cope with depressions . . . insolvency and bankruptcy could well be the price of any guaranteed wage program which was not carefully limited in its coverage and duration. Business, even large business, is not the master of its fate where the business cycle is concerned."

#### Search For Stability

Others warn that it will reduce rather than increase the number of available jobs. They contend that it will discourage risk capital, that it will make management think twice before expanding. They argue that a man should not be paid for not working. They say a better way would be to work toward increasing state unemployment compensation payments.

It may take years to decide which side is right. Or the first recession may provide the answer.

Even before GAW became a live issue, the quest for stability was gaining in all industries. Particularly in the field of labor relations.

Steel, coal, railroads, automotive, electrical, and other major industries settled down to relatively good relations with labor after years of chaos and strife.

Harry M. Moses, president, Bituminous Coal Operators' Assn., describes it this way:

"Whatever the future may hold in the relationship between management and employees, you may

## How GAW will affect your business

**It will increase your costs.**

**It will impose a premium on better planning.**

**It may force you to diversify.**

**You may have to drop minor, unstable items from your product line.**

**It may increase your worker efficiency.**

**You may have to be cautious about accepting new business.**

**Whether it's a bread-and-butter account may be the determining factor.**

**You may have to revise your advertising and sales policy.**

**You will have to take another look at your production set-up with a view to increasing efficiency, reducing unit costs.**

be sure that the story will be underlined by a quest for stability.

"I am not naive enough to believe that the country has seen its last major strike. But I do believe that we have gained enough experience in our quest for stability by this time that we never again will lose sight of this goal."

In steel, management and labor have been working hand-and-glove in recent years not only to keep the peace, but to share responsibility for maintaining industry

prosperity and welfare of workers.

After 50 years of chaotic relations, the railroads and their labor leaders have lived together for the last 25 years with only scattered strikes.

Good management has always tried to stabilize production. Automakers introduce new models to stimulate consumer interest during the seasonal low period, for example. GAW would intensify management efforts along these lines.

## IRON & STEEL: MARCH OUTPUT BY DISTRICTS

As Reported to the American Iron and Steel Institute

BLAST FURNACE NET TONS	PIG IRON		FERROMANG. & SPIEGEL		TOTAL				
	Annual Capacity	March	Year to Date	March	Year to Date	March	Year to Date	Pct of Capacity	
								March	Year to Date
DISTRICTS									
Eastern	17,456,100	1,324,771	3,544,357	26,108	75,015	1,352,879	3,619,372	91.2	84.1
Pitts.-Yngstn.	29,931,670	2,227,262	6,131,485	24,682	69,486	2,261,344	6,200,961	88.5	84.0
Cleve.-Detroit	9,892,609	753,264	x2,109,680			753,264	x2,109,680	91.5	88.2
Chicago	16,431,060	1,345,056	3,705,447			1,345,056	3,705,447	96.3	91.4
Southern	6,419,080	449,458	1,264,682	4,859	15,968	454,315	1,260,651	83.3	80.9
Western	4,040,600	307,091	834,843			307,091	834,842	99.5	83.8
TOTAL	23,971,100	6,406,902	x17,590,493	57,049	160,460	6,463,951	x17,750,973	90.6	85.7

STEEL NET TONS	TOTAL STEEL				ALLOY STEEL*	
	Annual Capacity	March	Year to Date	Pct of Capacity	Index**	
DISTRICTS						
Eastern	26,467,896	2,106,284	5,712,761	93.7	87.4	182.0
Pitts.-Yngstn.	44,342,630	3,463,843	9,562,321	92.5	87.4	122.9
Cleve.-Detroit	13,024,000	1,019,226	2,874,214	92.1	89.5	166.7
Chicago	27,852,790	2,267,183	6,198,680	95.8	89.7	145.7
Southern	7,063,420	538,938	1,436,325	89.6	82.1	154.9
Western	7,028,470	543,276	1,570,923	94.3	90.6	149.7
TOTAL	125,828,310	9,861,764	27,316,424	93.4	88.0	146.3

\* Included under Total Steel.

\*\* Based on average production of the three years 1947 through 1949 as 100.

x Revised.

## LIMESTONE: Open Quarry Port

**New port ships first stone from new quarry . . . Great Lakes operation has 3 million ton annual capacity . . . Package deal includes all processing equipment.**

◆ NEWEST raw materials port on the Great Lakes opened for business recently with the loading of a dolomite limestone cargo.

Serving the equally new Cedarville Quarry, Port Dolemite sits on a deep channel off Lake Huron in Upper Michigan's limestone country. Both port and quarry are owned by Michigan Limestone Div., U. S. Steel Corp.

Crushed dolomite travels 5 miles

from the quarry to the port. At the port, secondary and tertiary crushers, plus a screening plant, process up to 1800 tons an hour.

Processed limestone is loaded from a 620 ft dock, where use of a traveling loading shuttle cuts loading time to about 5 hours.

Seven self-unloading steamships of the Michigan company along with other Great Lakes carriers will handle port's shipping.



**GRAND LADY** of the Lakes, steamer *Calcite* sets sail with first cargo from new Port Dolemite. The self-unloading ship carries limestone of nearby Cedarville Quarry.



**ELECTRIC SHOVEL** (left) scoops first dolomite limestone from high level deposit of new Cedarville quarry. Truck (center) dumps dolomite into gyratory primary crusher on floor of quarry. Graded stone (right) travels by conveyor from crusher to surface.

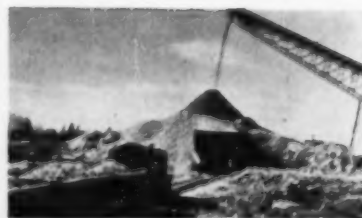
NEWEST limestone operation in the Upper Michigan area, Cedarville Quarry has a rated capacity of about 3 million tons a year.

Two years in the making, Cedarville has primary crushing facilities, underground conveyors and is served by a new rail line.

Cedarville deposit has a high magnesium content, lies near the surface with little overburden. Stone is scooped up by electric

shovels and loaded into mine trucks. Trucks carry stone to the primary crusher, which stands on the quarry floor, 40 ft below the surface.

Crusher grinds stone to various specified sizes and the graded product travels by conveyor to the surface. A new diesel electric rail line hauls stone 5 miles to Port Dolemite for further processing and shipment.



**DOLEMITE DIESEL** cuts 5 miles through swamp and rock, carrying stone from quarry to port.

**A. M. Kennedy, Jr.**

## **Gives The Steel Buyer's Slant**

**Assurance of supply rates high with steel user . . .**

**Suppliers rated on basis of service, quality, and price . . .**

**Broken delivery promises can be expensive.**

*Q. What does a purchasing agent consider when he is ready to place an order for steel?*

A. What he considers long before he is ready to place an order is the general background of the steel company's performance in terms of quality, delivery service, technical service, reliability and, of course, the economics of the situation. When he is ready to place a specific order he is concerned with bringing up to date all of these standards into a current decision on where to buy his steel.

*Q. What do you mean by "standard of values"?*

A. A purchasing agent's standard of values is expressed in terms of the five fundamental objectives of every purchase: (1) Quality, (2) Assurance of supply, (3) Technical service, (4) Delivery service, (5) Price.

For any commodity, steel, for instance, there is a relative weighting he gives to each factor depending on its importance to him. The emphasis on each factor changes by commodity—even within grades and types of steel.

For instance, when you're buying wrapper sheets for refrigerators, the quality factor may be of extreme importance. But for the small bar size angles and other commercial quality items which also go into appliances, quality may only need to be acceptable. So your standard of values changes in its "mix" with every form of steel you buy.

But, most steel buyers put "assurance of supply" very high on the list. They want suppliers who will carry them through tight markets, and underwrite their long term growth. They want to develop mutual loyalties over the years and will, in my opinion, avoid the temptation of trying to "chisel" lower prices during soft market periods, to preserve their relations with loyal suppliers.

*Q. Do you let your steel suppliers know how they stand competitively?*

A. Yes, we keep specific records, particularly in the appliance divisions. We have one recap sheet which we furnish to our suppliers that simply codes the suppliers as A, B, C, D, E, and F. It doesn't indicate what a steel supplier's competitors are doing, but it shows a producer how he stacks up against all the rest.

*Q. Suppose a company's "standard of values" rating fall off. Does that company get fewer orders from you?*

A. By our way of figuring a company's participation in our business over a period of time, a continuously low rating on quality or delivery service or technical service to us would result in less business to him.

*Q. Can a steel company have a high rating in one quarter and a low one in the next?*



**A. M. Kennedy, Jr., Asst. General Manager, Purchases, Westinghouse Electric Corp., Pittsburgh.**

A. Yes, I'd say that, although we have a policy that we are not going to vary people's share in our steel business so rapidly that it disrupts our relations with that company. From quarter to quarter, if a company has an exceptionally bad quality record or an exceptionally bad delivery record, it is bound to affect the next period.

*Q. How about a company that has consistently high rating?*

A. Our "standard of values" is designed to be an incentive for steel companies. The incentive is more tonnage, more participation in our current business volume, and in our future plans.

*Q. Just how important is the quality element?*

A. There are several places in our business where quality is a dominating factor in our "standard of values." Consider the appliance business for example. Here we buy steel primarily on an application basis, with each item designed for a specific type of part. This is a competitive business, and we try to work the material to the utmost. In specifying steel, we

want to get the maximum out of the material for the particular application. Suppliers are graded on quality ranging from double AA which is an excellent grade, down to F which is considered unsatisfactory. We must keep track of all of the steel we receive which is unsatisfactory, as well as the many reasons for its failure. This means watching the percentage of scrap due to breakage, laminations, or other surface imperfections. We keep a careful record of the extra operations required to make the steel usable, and, of course, watch the rejection of a supplier's material very carefully.

*Q. How do delivery promises fit into the picture?*

A. Say you are designing on a part-for-part basis, and you are maintaining an inventory on a part-for-part basis. If your steel for that specific application is not delivered on time, production can be disrupted and it becomes awfully expensive. So we keep track of the dates promised against the actual shipping date. In our "standard of values" it may take a 25 to 30 pct weighting.

*Q. Is cost a big factor in where you place an order?*

A. We're interested primarily in the cost of the product installed. If a steel company can help us in our application of steel to do a better job, to make a better product, or to reduce the cost of that product, it has actually reduced our costs. So I'd say we are cost reduction conscious.

*Q. How do you factor supplier ingenuity into your "standard of values"?*

A. We will not protect any steel supplier against losing business if somebody else can come in and do a job for us that will reduce our cost, because that is progress, it's technology.

## CONSTRUCTION



NOISE and vibration were absent when high strength nuts and bolts were used in erection of a Park Avenue apartment house in New York.

## Nuts, Bolts Replace Rivets

◆ Steelwork for an 18-story apartment was completed in New York last week without the traditional noise of riveting hammers to disturb its Park Ave. neighborhood.

About 35,000 high strength bolts were used in the structural assembly. Their utilization, prompted in part by a current shortage of riveting crews, speeded construction and resulted in lower costs, according to the builders.

Use of bolts for the building, located at 35 Park Ave., was approved by the city's Housing and Building Dept. Amendments to the city's building code to permit more widespread application of high strength bolts are now pending.

### Speed Means Saving

"Fabricated joints using high strength bolts have proven fatigue strength at least 20 pct higher than those using rivets," said John S. Davey, vice-president of Russell, Burdsall & Ward Bolt and

Nut Co., suppliers of the fasteners.

Initial cost of the bolts is higher than cost of rivets, but faster erection speed more than compensates for the extra cost. For a 1-in. carbon steel rivet, maximum tension that can be induced in the rivet by cooling is about 22,000 lb. The nut on a high strength bolt can be tightened up to the yield strength of the steel, about 42,000 lb for a 1-in. bolt.

Compressor, impact wrench and holding wrench are used, as compared with compressor, gun, forge, air jack, cones and tongs for riveting. Anthony Campagna & Sons are owners and builders of the new apartment.

Special scaffolding was unnecessary as bolters did not need to shift positions frequently. Only a brief period of training was required before workers unskilled in the operation became proficient in the use of the pneumatic wrench and holding wrench to install the high strength bolts.



## PLATE: Market Tightens on Purchasers

Consumers from all quarters up demands . . . Deliveries extended to June in Midwest . . . Purchasers scramble to build inventories ahead of tighter market later on . . . Carryovers loom for midsummer.

♦ WITH electricweld line pipe demand for steel plate still strong, volume buyers are beginning to fill spot shortages from warehouse sources. And purchasing agents are betting inventory dollars that their troubles will increase all the way through to August—probably beyond.

Despite delay of the Trans-Canada gas line, which would have consumed 300,000 tons of electricweld pipe made from plate, electricweld producers have enough orders on the books to carry them through July-August. Tentative business booked on expected approval of transmission lines makes balance of the year look good. Some mills still have electricweld space but capacity has always been ample for this product.

Plate demand sank through 1954, from a high of 571,000 net tons shipped in January down to 364,000 net tons in August. Even as the upturn began, the grade was not showing great strength, had reached 420,000 net tons shipped by December, then climbed to 438,000 in the opening month of 1955.

At the opening of first quarter 1955, mill deliveries of plate were anywhere from 2-4 weeks, and space could be booked in the week previous to the month of delivery. As second quarter opens, mills are booked through June. While plate is available in spot tonnages for late June delivery, July is booked almost as solidly as June. A 30-day mill carryover is expected by July, buyers report, with the result that what looks like open mill space for August will be largely wiped out by July carryover.

Depending on the individual mill, carryover problems will hit sooner than July, though they

won't amount to the 30-day carryover that looks positive for July. May, for instance, will see a substantial carryover of plate orders into June, for some producers.

While a handful of observers are pointing out that there is inventory building going on, and particularly in plate, surplus plate inventories will not wipe out the pressure on mills for earlier delivery after August. Here's what buyers have to say:

**Construction equipment:** One purchasing agent in the construction equipment industry, for example is purchasing about 100 pct more steel than he was using a year ago, and producing only about one-third more equipment.

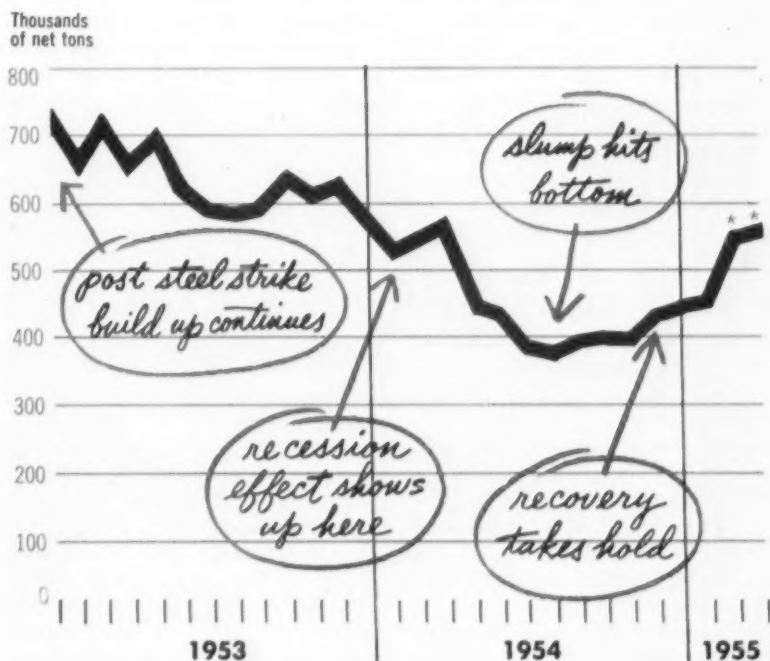
He's counting, however, on the surplus inventory to carry him during capacity operation in his own plant in third quarter when his plate suppliers begin to feel real pressure from builders of linepipe.

**Linepipe:** Indicative of the concern over third and fourth quarter is the heavy volume of plate being ordered by linepipe producers.

**Tank fabricating:** A tank fabricator is buying 80 pct more steel plate than was the case at this time one year ago, and another is getting 75 pct more.

**Car builders and farm equipment makers** also have stepped up their buying.

### Plate Shipments Turn Up



## HEADQUARTERS: Cities Want Engineers

**United Engineering Trustees have outgrown New York home . . . Cities offer free sites, other inducements to lure the organization . . . Pittsburgh has inside track with committee endorsement—By R. D. Raddant.**



OLD UET building in New York is outgrown. Cities bid for its new location with fat offers.

◆ DOWRIES of cash and real-estate are being offered the United Engineering Trustees, Inc., as major cities woo the organization to move into their city limits.

The 51-year-old organization has long filled to overflowing its old building at 23 West 39th Street in midtown New York City. It's an accepted conclusion that it will have to move in the relatively near future from its 16-story headquarters.

With its combined membership of almost 150,000 engineers, its convention potential, prestige value, and other assets of a national organization of its stature make it an attractive object for any city.

Furthermore, the research work and library of the United Engineering Trustees carries with it technological value that is particularly sought by any city that would call itself an industrial or technical center.

To date, Pittsburgh, Philadelphia, Chicago, Washington, D. C., and New York itself have been most active in attempting to lure the organization with offers of free sites, money for research, and other attractions.

Final decision will have to be made by the boards of directors of the four founding organizations that make up the United Engineering Trustees. They are the American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, The American Society of Mechanical Engineers, and American Institute of Electrical Engineers.

### Pittsburgh Bid Tempting

Pittsburgh now appears to have the inside track. A "Committee of Five Presidents" studying the situation issued a majority report favoring Pittsburgh. The board of directors of the AIEE approved the report and recommended similar action to the other three Founder Societies and also to the American Institute of Chemical Engineers, which has indicated it will join the organization when a suitable headquarters with space and facilities are in the works.

However, the issue is not closed. A minority report of the "Committee" is forthcoming and the sentiments of the other boards and opinions of the memberships could result in a different site choice. Mail from individual members is strongly partisan, but not conclusively for any one site.

To bring the foundation to Pittsburgh, its industries held out \$1½ million, several sites, and the Mellon Foundation offered \$500,000 for research. The

site recommended by the committee is in the Schenley Park area.

Philadelphia has extended a 6½ acre site in the re-development area and indicated it would match any other city in cash inducements.

Chicago interests mentioned three sites, including a full city block in the Illinois Institute of Technology campus in south Chicago. Others were at the University of Chicago and Northwestern University at Evanston.

### Andrew Carnegie Sponsor

In its present home town of New York, an area of more than an acre in the Columbus Circle area now being cleared for the huge auditorium was made available and commercial and industrial interests stated publicly that they would buy the site. Other local committees are working on other New York sites.

Land in the Rock Creek Park area in Washington, D. C., was made available if the organization wished to go to the capital, as many other national organizations have done.

Others have been less positive, but cities throughout the entire country have indicated interest in bringing in the organization.

What is now the United Engineering Trustees, Inc., was formed in 1904 as the United Engineering Society by the four founding organizations. Andrew Carnegie, who had previously been approached, donated \$1,050,000 for erection of the building. It was erected in 1906, a 13-story building that was enlarged to its present 16 stories in 1916. It has been too small for its member societies and related engineering societies that would like to be tenants.

## Engineers: Youth Program Corrals 'Em

**Pittsburgh fair gives cash and schooling to kids with technical leanings . . . Survey shows program steers high percentage into engineering work . . . Move draws broad support—By W. Brookfield.**

◆ CATCH the little rascals while they're still asking "why" and build that first tinkering urge into a permanent engineering bent. Recent surveys show the soundness of this Pittsburgh formula for recruiting engineers.

Technical displays bring youngsters cash and scholarships at Pittsburgh's School Science Fair each year. A poll of the winners over a 10-year period showed 45 pct doing engineering and research work. Of the 87 winners responding, 16 pct are in the medical field; 7 pct have management jobs in industry.

Now in its 16th year, the fair is a broad community effort serving a vital community need. Sponsors include the Buhl Planetarium and newspaper, radio, industry, college and scientific groups. Idea is to increase the region's supply of engineers first by arousing interest, then by locating talent and, finally, by sustaining technical leanings through recognition, encouragement and assistance.

### Draws Big Field

This year 1076 students from Ohio, West Virginia and Pennsylvania have submitted 766 exhibits. Entrants come from the 7th through the 12th grades. They work up their own displays, which range from model planes to small atom smashers.

More than 100 of the entrants will receive awards. Same display can take more than one prize and winners have some say in their reward.

If an 11th or 12th grade boy wants a college education, he can take a crack at the scholarship grants offered through the Allegheny County Joint Committee on Scholarship Aid. Of the past win-

ners polled, 72 finished college or are there now. Many went on to receive higher degrees.

### Get Boys Jobs

If a 12th grade winner wants to go right into industry he gets a helping hand from the program. First he is tested by the Psychological Service of Pittsburgh.

If he fills in the right blocks and otherwise indicates mechanical aptitude, he is recommended to a local firm for on-the-job training. This starting push has sent a great many boys from the fair program into man-sized jobs as draftsmen, machinists, radio repairmen, etc.

Apart from these specific aids, the fair has the unique and telling feature of recognizing a boy's technical ability at a time when no one else gives a hoot. Engineers coming out of college nowadays get all kinds of attention and take it as their due. Pittsburgh turns the

spotlight on juvenile genius and the pleasant impression sticks.

Comments of past participants show the boys don't forget. A research metallurgist at ALCOA who came out of the program said: "The fair keeps alive the flair most kids get for science." A fair winner who is now a chemical engineer for the Army put it this way:

"The fair gives encouragement and recognition to young scientists and is particularly desirable during the present shortage."

### GE Launches Program

General Electric Corp.'s new program for aid-to-education will match employee contributions to their Alma Mater dollar-for-dollar up to \$1000.

Contributing employees must have a minimum one year's service with the company and contributions must be an actual gift, not a pledge.



## PLASTICS: Packaging Uses Grow

**New plastics provide support as well as insulation for parts and instruments . . . Urethane will expand to fill a package cavity . . . Buick has installed automated coating line—By K. W. Bennett.**

♦ **PLASTIC PACKAGING** in 1955 is making its strongest bid to date for the industrial packaging market.

Urethane, a foamed plastic that will provide support and insulation for the delicate instruments, precision parts, is the latest arrival. Urethane's powerful potential selling point—it can be mixed, poured into place, say between the walls of a double-walled packing case, and then will expand to fill the cavity. Urethane foam, like heat expanded phenolic foams and polyethylene foams, expands into a mass of airtight bubbles—a mass that can be made waterproof or water absorbent, elastic or firm.

And all three plastic foams will absorb shock, provide thermal insulation, can be made to bounce like rubber or firm enough to support up to 1.5 tons per sq ft.

### Shaped to Fit

Items being shipped in foamed plastic, besides consumer items, already include scientific instruments, electronic equipment, metal

cutting drills, ceramic heating elements, high shear torque bolts, electronic tubes; as well as defense work service that still includes land mines, projectile warheads, and plasma.

Heat expanded polystyrene and vinyls are already extensively used in packing. They are obtainable as prefoamed blocks that can be worked to shape with woodworking tools, or as pellets that can be expanded in molds shaped to fit around the particular part to be packaged for shipment. Steam boxes around perforated molds or a steam probe that can expand foam in the area in which the foam will be used for packing, are employed to expand the resin mix. As a core material, the plastic resin can be foamed in place between two panels.

### Easily Handled

Tough but collapsible bags of polychloroprene in a range of sizes capable of carrying from 55 gal to 24,000 lb of bulk chemicals, a U. S. Rubber and Union Carbide & Car-

bon development, are moving this year into the industrial market. Used for malt, starch, or chemicals until now, the big containers are being used for plastic resin shipments, and are being developed for resin coated shell molding sands, with at least one large automotive company reported interested in this application.

The container can be moved by lift trucks, is air tight and can be used with an inert gas atmosphere to protect the contents during loading. Seven containers with a 7 ft diameter and an 8 ft height can be loaded on a standard flat car, but they can be handled by barge or truck as easily. One construction company will begin using them this week to carry cement over water to a tough cross-water construction job.

A shell molder, for instance, would use the container as an in-place sand bin until it was empty, then hoist it off a frame that supports it over the foundry sand intake when the bag is empty. Filled replacements for the empty bag could be stored outside with no danger of contamination until they were needed.

### Even Automation

Stripoff plastic coatings for spare parts aren't new. Eastman Chemical Products brought out a butyrate peelable plastic coating for machinery parts in World War II. The part is shipped in a transparent coating .05 in. to .1 in. thick that is easily peeled, and the coating can be reclaimed. In some cases no other packaging than the shipping carton is necessary. At present, gages, engraving plates, gears, micrometers, pistons are being shipped in this manner, to mention a few uses.

Last week at Chicago John Say-



OVERWRAPPING machine of Wrap King Corp., Holyoke, Mass., handles up to 66 packages of saran film a minute for New England Provision Co., Boston.



lor, of General Motors Buick Div., described a new \$18,000 installation that sprays a light polyvinyl resin coating on chrome and stainless auto trim to protect the finish during shipment to Buick service parts warehouses. The new coating is fused at 300°F under infrared lamps, will have an identifying label printed on at the point of removal from the curing oven, and will produce 1300 pieces per hr from a two man packaging team, where 40 packaged parts per man hr were the old record.

A major bearing producer will begin shipping stripable plastic coated antifriction bearing assemblies to civilian consumers in about three months. Cellulose acetate and butyrate are being developed. Army Ordnance, Navy Bureau of Ships, Navy Bureau of Air, and the Air Force are conducting tests which may result in rewriting of specs requiring shipment of antifriction bearings in tin and fibre containers to include plastic coatings. Air Force seems likely to accept the development earliest, but all services are conducting tests. From an economic standpoint, it appears the plastic coating would supplant tinplate as a military bearing packaging item.

Consistently, the plastic coating method can reduce packaging costs as much as one-third to one-half below the cost of previous methods from evidence presented at the National Packaging Conference.



"I'm not sold on his methods but he does command respect."

April 28, 1955

## DEFENSE



**EASY PICKUP:** Navy's new MB-1 mobile crane carries a 40 ton Privateer at Floyd Bennett Field, New York. Crane handles biggest Navy combat planes.

## Bombproofing:

**Say plant dispersal hard to sell, needs new plan.**

Government mobilization officials are having a tough time selling dispersion to industry. They would like to see a Hoover-type commission created to work out a good balance of dispersion "within the practical limits of a properly functioning urban economy."

The balance will be obtained, Dr. Arthur S. Fleming, Director of the Office of Defense Mobilization, tells Congress, when leaders in management and labor as well as state and local governments join to work out solutions for their own specific problems.

### Old Plan Helped

Recent developments in nuclear weapons have outmoded the present rule that new industrial facilities must be built at least 10 miles from a target area to qualify for government aid. But he said that a new "mileage yardstick" can not

be applied uniformly to the nation without disrupting some parts of the economy.

Plants which did adhere to the old yardstick have "reduced their vulnerability to attack," the ODM chief says. The federal government, he adds, will make available basic information and guidance to states and cities to help them work out dispersal plans.

Same information will go to companies considering constructing new plants. ODM will require new plants to follow such advice before granting fast tax amortization benefits, he says.

## House Okays Ships

Atomic submarines and a fifth supercarrier are part of a Navy program recently approved by the House of Representatives. Although the measure stirred heated exchanges on the question of revealing security data in its presentation, only three opposing votes were cast.

The measure authorizes the Navy to spend \$1,317,000,000 on a building program due next July.

## EXPANSION IN INDUSTRY

### Furnace:

#### New electric furnace pours first heat at Dow.

Dow Corning Corp., Midland, Mich., recently tapped the first heat of 98 pct pure metallic silicon from the plant's new 6000 kva electric smelting furnace.

Each tap yields approximately 1½ tons of pure silicon used in the manufacture of silicones.



CLOSEUP of carbon electrode in Dow Corning's silicon metal furnace. Company recently tapped its first heat.

The furnace is heated by an arc which flashes from three electrodes to the bottom of the charge of quartzite and coke. Each electrode is energized with low voltage 3-phase power in turn, sweeping an arc through the charge in a rotary motion.

Electrodes are 2½ ft in diameter and 27 ft long. Silicon reduction temperature is 3100F and it

is estimated that the furnace consumes as much electric power in 1 hour as the average home uses in 3 years.

### Mill in Operation

Kaiser Aluminum & Chemical Corp. has begun operation of a new 60-in., 4-Hi cold rolling mill unit at Trentwood, Wash. The new facility is part of the company's \$1.5 million plant development program.

Rated capacity of the 3000 ft per minute mill is 36 million lb of light gage sheet per year.

This ups the plant's overall aluminum sheet and plate rolling capacity to approximately 400 million lb annually.

### Power:

#### Tax write-off okays to start new power buildup.

Possible shortage of electric power in a new emergency, coupled with rising demands from industry and atomic energy centers in peacetime, leads the government to set off another drive to encourage private power expansion.

Office of Defense Mobilization will offer certificates of necessity permitting fast tax amortization for an additional 34 million kw of power capacity over 3 years. Total mobilization goal for power is now 150 million kw by the end of 1958, an increase of almost 50 pct over present capacity. Most of the buildup will be in the power-hungry areas of the South, Southwest, and West.

#### Power Output Soars

ODM notes that applications for fast tax write-offs for power have been pending since the old goal was closed in 1953. These will now be processed to start the buildup. About 40 pct of the new buildup

has already been tentatively scheduled by private power firms.

In the 2 years ended last Dec. 31, electric utilities added some 21 million kw of new capacity, the largest expansion in history. This brought total capacity at the end of 1954 to about 103 million kw, compared with 49 million kw in 1944.

### Steel:

#### Republic puts \$35 million into broad expansion.

New facilities for sheet steel and plastic pipe production are part of a \$35 million expansion program just approved by Republic Steel Corp. directors. Authorization also covers new mining and silicon strip developments.

Fund approval will enable the company to implement a recently announced project for production of hot and cold rolled sheets at the Gadsden, Ala., plant. A by-product coke oven battery slated for Massillon, O., also gets the go-ahead.

Plastic pipe equipment installed at Republic's Pressed Steel Div., Cleveland, will have a capacity of more than 650,000 ft of pipe a month.

At Youngstown, rehabilitation of the company's by-product and Bensol plant will go forward. Equipment for coating steel pipe with plastic will furnish Republic with an entirely new product at Youngstown.

At Warren, O., Republic is upping production of silicon strip by 1500 tons a month. Near Crystal Falls, Mich., the company is opening up the Genessee ore body to make available at least 1.5 million tons of ore.

Modernization of two blast furnaces, installation of electrical equipment and coal mining machines are among the other moves covered by the fund authorization.



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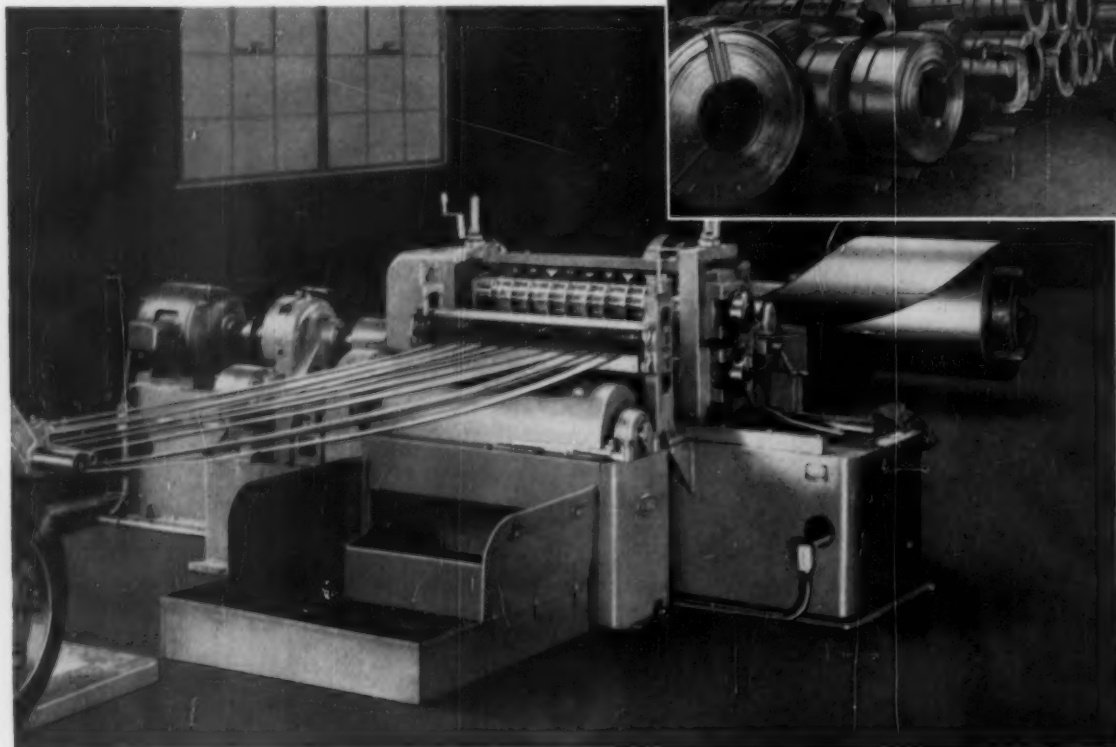
Position

Company

Street

City  State

Yoder No. 3-36" Slitting Line with Scrap Chopper. Installed by  
Berger Machine Products Company, Brooklyn, N. Y.



## To Slit or not to Slit *your own strip...*



In a certain strip mill, slitting big tonnages of heavy coils, a Yoder high speed slitting line for many years has been paying for itself about every three months. Such a line is, however, far too big and costly for tonnage requirements in most plants.

For metal fabricators and warehouses handling smaller coils and tonnages, Yoder offers a selection of lower cost slitters, uncoilers and recoilers, capable of handling an astonishingly wide range of coil weights, widths and gauges, at speeds sufficient to make

their operation profitable on a surprisingly small volume.

The revised fourth edition of the YODER SLITTER BOOK, just off the press, contains production records, time studies and other data helpful in determining to what extent a slitter may be profitable in your plant, be your requirements small or big.

A copy is yours for the asking. Also estimates and recommendations, without cost or obligation on your part.

**THE YODER COMPANY • 5510 Walworth Ave., Cleveland 2, Ohio**

### Complete Production Lines

- ★ COLD-ROLL-FORMING and auxiliary machinery
- ★ GANG SLITTING LINES for Coils and Sheets
- ★ PIPE and TUBE MILLS—cold forming and welding







On the back of each color TV viewing screen are more than one million phosphor dots (19" screen) grouped in uniform patterns of red, green and blue. Electron beams registered with each dot are shot at these phosphors—the intensity determining the dominating color.

Directly behind the screen in each tube is a Cupro Nickel shadow mask containing more than 400,000 holes. Each hole is registered exactly with its group of phosphor dots on the screen and with the electron beam—the mask controls the register of color—keeps the image sharp—the color true.

## Color TV came to ANACONDA

When the television industry needed a shadow mask to control electron beams in the color tube, Buckbee Mears Company, photoengravers of St. Paul, Minnesota, produced it. When they needed thin strip metal in which 2500 perfect holes per square inch could be etched, Anaconda produced it.

When color TV came to Anaconda, we developed a new alloy, 6% Cupro Nickel, with such uniform quality, structure and thickness (0.0075") that the microscopic holes could be etched without flaw. The new alloy also has the strength and malleability to take forming without distortion of the dot structure, and functions in a color tube without contaminating the vacuum.

Again, a copper alloy has solved a difficult problem. Perhaps yours can be made easier through Anaconda research and development. The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Limited, New Toronto, Ontario.

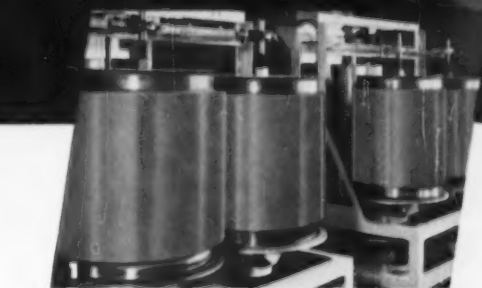
**1** Rolls of the Cupro Nickel strip entering coating machine to be sensitized for photographic printing.

**2** Camera printing dot pattern on the sensitized Cupro Nickel strip.

**3** Printed Cupro Nickel strip at right entering etching machine where acid baths plus washing and rinsing operations produce finished mask.

**4** Each 19" shadow mask has more than 400,000 holes, size  $.010 \pm .0005$ . Several areas of screen are inspected electronically to check hole size.

**ANACONDA** the name to remember in  
COPPER • BRASS • BRONZE



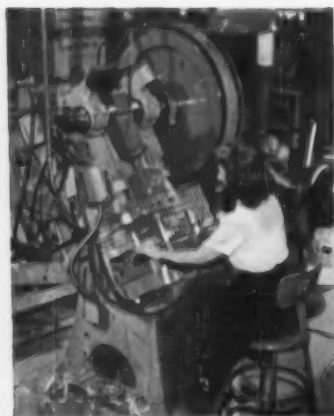
# Rejects dropped from 11% to 1%

when Farrington switched to Formbrite for  
frames of Remington Shaver case



One of the two frames that give added eye appeal to the handsome Remington case. Frames are  $4\frac{1}{2}$ " wide,  $5\frac{1}{16}$ " long and  $\frac{1}{2}$ " deep.

**Formbrite\* fine-grain drawing brass is harder, stronger, springier...often polishes in half the time**



Press operator blanks frames for the Remington case out of  $6'' \times .0126''$  Formbrite drawing brass strip.

Frames are set in fixture for finishing operation on this automatic, three-station polishing machine. Bright, lustrous finish is obtained in one pass through the machine.



Each day, thousands of these brass frames for the Remington-60 Deluxe Shaver case are made by Farrington Manufacturing Company of Boston. Using ordinary brass, rejects *after polishing* were running at the rate of 11%.

Then Farrington switched to Formbrite. Rejects dropped immediately to less than 1% . . . and with far less polishing Farrington now gets the best finish they've ever seen. And that's important because the Remington case helps sell the shaver.

You'll find Formbrite surprisingly ductile . . . it's readily stamped, formed, drawn and embossed. Yet with all its advantages, it costs no more than ordinary drawing brass. We'd like you to know this cost-saving metal better. May we send you descriptive literature (ask for booklet B-39)? A free sample to try in your own shop? Or have a representative call? Simply write to *The American Brass Company, General Offices, Waterbury 20, Conn.* In Canada: *Anaconda American Brass Ltd., New Toronto, Ontario.*

\*Reg. U. S. Pat. Off.

8571

## Formbrite

FINE-GRAIN DRAWING BRASS

AN **ANACONDA**® PRODUCT  
made by The American Brass Company

## Report To Management

### Control Authority Will Continue

Embarrassing as it may be in some quarters, the Administration will ask Congress for standby control authority. Then a new law will have to be passed before the temporary measure expires.

**It won't stop with prices, but** will include requests to regulate wholesale and retail prices, wages, salaries, rents and consumer credit.

**Both parties agree** that the White House should have authority to regulate prices and other economic factors should an emergency arise. But Congress itself won't originate measure without prodding by the Administration. And the Administration will do it as quietly as possible to avoid charges of broken promises and uproars by special interest groups.

**Request will come through** hearings on extension of the Defense Production Act, starting within a few weeks. Then Administration spokesmen will request a broad, general, temporary amendment to the act simply giving the President power to regulate the economy in an emergency until Congress replaces the freeze with a permanent control law.

**Some pressure groups will try** to write in specific protections for their own segments of the economy. The farm lobby, for example, will try either for an exclusion or a minimum level at which farm prices could be frozen in relation to parity.

**Ike won't hesitate to act** if Formosa blows up. Although tension appears to be easing, keep in mind that Administration won't waste time before slapping on rigid controls if Red China moves across the straits.

### Production and Orders Still Climb

A business survey by the National Association of Purchasing Agents shows that for April 58 pct of the buyers report increased production and 57 pct show an increase of new orders. This

is more favorable than March report and sets a new high since Korea.

**Purchasers are stretching out** their lead time. Only 11 pct operate on a day-to-day basis while the number who are buying a full 120 days ahead jumped from 5 pct in March to 14 pct in April. A full 75 pct of the purchasing executives are planning ahead in the 30-90 day range.

**Nonferrous products lead** in tightness and price increases. On the up side during the month are copper, brass, zinc, magnesium, aluminum, tin, brass valves, rubber and paper. Cost of steel purchases also climbed, largely because of necessity of paying premium prices for tight products. In short supply are steel, copper, nickel, aluminum, as well as some building materials and chemical products.

### Make Sure You Are Informed

You don't have time to read everything. But it's vitally important that you know what's going on in the world and what its significance is. It's important that the heart of today's world-wide developments gets through to you.

**Devote a certain amount of time** for a briefing on political, economic and social developments. Each has an effect on your business planning from day to day operations to long range blueprints. Caution: Make sure the briefer or briefers know what they are talking about.

### Watch Your Pricing Policies

Consumers are having a field day bargaining for discounts or the "clergyman's rate." This is particularly true in the appliance and automobile field where buyers have years of bargaining experience with discounts and trade-ins.

**Business remains good through most** lines of consumer products and lower prices are a sign of competition among manufacturers, not of a slow demand.

## INDUSTRIAL BRIEFS

**Goes to Europe . . .** An expanding European market has led Colonial Broach Co., Detroit, to license Maskin A/B Thule, Malmo, Sweden, to manufacture the Colonial line to serve the European market. The Swedish firm will market the broaching machines and broach sharpeners under the trade name of "Colonial-Thule."

**New Line . . .** Colorado Fuel and Iron Corp. has signed an exclusive contract with the Bart Manufacturing Corp., Belleville, N. J., for nickel plating of CF&I steel plate products. Under the contract, Bart will electroclad steel plate, steel mill shapes, and flanged and dished heads.

**Diversifies . . .** Formation of a Special Products Div. to handle the development and manufacture of a diversified line of non-automotive products was announced by Robert F. Black, president of The White Motor Co. The new division provides facilities and specialization to explore new production and newly developed products.

**More Coke . . .** A new 24-oven battery of coke ovens designed by its Wilaputte Coke Oven Div. was recently pushed at the Ironton, Ohio, plant of Semet-Solvay Div., Allied Chemical & Dye Corp. The new ovens replace a battery recently dismantled at this plant and bring the company's number of ovens back up to 700.

**Transfer . . .** All operations of the Stevens Manufacturing Co. have been transferred to a new plant at Lexington, Ohio, from the former headquarters at Mansfield. The new plant is a single-story structure of 31,000 sq ft. Decision to build a larger plant was dictated by increased demand for the company's Stemco bimetal thermostats and switches.

**Moves . . .** Following its purchase by the Brubaker Tool Corp., the operations of the Morton Machine Works, Detroit, will be moved to Millersburg, Pa. The Morton firm, which becomes a division of Brubaker, was purchased Jan. 31 at a cost of approximately \$500,000.

**Acquired . . .** Indiana Steel Products Co., Valparaiso, Indiana, has acquired the Ferroxcube Corporation of America, Saugerties, N. Y. Ferroxcube's principal products are ferrites and Magnadur ceramic magnets. Indiana Steel Products is the world's largest manufacturer of permanent magnets.

**Gets Contract . . .** Heritt-Robins Inc., Stamford, Conn., has been awarded a contract to supply two miles of conveyor belting and machinery components for the new San Manuel Copper Mine Co. in Tiger, Ariz. The conveyors will carry copper ore from the storage area outside the mine through the processing mill.

**Ready to Work:** Continental Div. of Ford Motor Co. has completed a move to its new plant and office building where the new Continental car will be built. The high-quality, low volume auto will be introduced later this year.

**Added Line . . .** Continuous seam welding tube mills have been added to the Pandjiris Weldment Co.'s line of production welding equipment. The new mills are capable of welding pipe or tubing 4 to 8 in. in diameter with metal thickness 1/16 to 1/2 in.

**More Space . . .** Increased demand for its engineering services resulted in the acquisition of additional working space by Pioneer Engineering and Manufacturing Co., Detroit.

**Broaden Base . . .** Formation of a new Special Products Group to expand manufacturing and marketing activities of Air Brake Div., Westinghouse Air Brake Co. was announced. The group will specialize on quality controlled manufacture, assembly and test of industrial apparatus.

**Expands . . .** Aeroquip Corp., Jackson, Mich., announces acquisition of Marman Products, Los Angeles, at an undisclosed price. Marman makes the Marman clamp, widely used for joining pipes and other conduits. The purchase is a step in the parent company's program of expansion and diversification.

**Merger . . .** Merger of Salem-Brosius, Inc., and Phillips Corp. has been announced. Phillips Corp. will be operated in the future as the Phillips Div. of Salem-Brosius. The company makes materials handling equipment for automotive and metalworking fields.



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that stands up...



**FLAT-ROLLED STEEL**

produced by a specialist

The kids who roll down Oak Hill in a coaster wagon, and those of us who ride in the world's best automobiles, put a lot of faith in flat-rolled steel.

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Call on our 25 years of specialization in flat-rolled products. Our representative will be glad to discuss your particular needs at your request.

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April 28, 1955



## Ford Move Tips Off New Auto Line

**New special products division, management realignment, indicate fifth car is in the works . . . Continental and next new car will result in overlapping price ranges . . . GM sets example—By T. L. Carry.**

♦ CREATION by the Ford Motor Co. of a second Special Products Div. indicates that the company is going to produce a fifth line of cars. With its present line of Ford, Mercury, Lincoln and the upcoming Continental, Ford has never been able to compete on a complete scale with General Motors and Chrysler Corp.

Both GM and Chrysler, with five lines each, produce cars in a price range suitable to the needs and tastes of every type of customer. Ford, on the other hand, can cover the low, low-medium and luxury price fields, but has never had a car in the high-medium price range.

The new car, if it is produced, will compete with Buick's Roadmaster and Super, Oldsmobile's 98 and the Chrysler New Yorker.

Although Ford will make no comment on the possibility of a new car, the company's expansion since the end of World War II and the latest announcement cannot be ignored. Also, Ford's first Special Products Div. was set up in November 1953 and in less than a year the company announced the creation of the Continental Div. which will produce cars in the luxury field.

**Executive Changes . . .** Creation of the new division was revealed by L. D. Crusoe, executive vice-president of the company's car and truck group. Several managerial changes were also announced.

Benson Ford, who has been vice-president and general manager of the Lincoln-Mercury Div.,

will assume the duties of vice-president and group director of Mercury and the Special Products Div. William Clay Ford, who continues as vice-president and general manager of the Continental Div. is also vice-president and group director of the Lincoln and Continental Divs.

F. C. Reith becomes vice-president and general manager of the Mercury Div. and Ben. D. Mills takes over the Lincoln Div. in the same capacity. R. E. Krafve, has been appointed general manager of the Special Products Div.

Like the Ford Div., each of the other car divisions of the company will have full responsibility for the development, production and sale of its own product line. Separating Lincoln and Mercury will increase competition both within



CHRYSLER'S gas turbine fits neatly under a Plymouth hood. Only external feature is the exhaust vent below rear bumper, above. It is being test driven on city streets around Detroit.



**POWERFUL** Homelite Model 17 Chain saw being assembled in Homelite factory at Port Chester, N.Y.

## Girl assembles chain saw 30% faster with RB&W SPIN-LOCK screws

**SPIN-LOCKS** hold tight where previous fasteners let go

Usually production men turn to RB&W SPIN-LOCK screws because they need a fastener that won't lose its grip.

But Homelite Corporation of Port Chester, N.Y. got a lot more value than they expected when they tried SPIN-LOCKS on their famous chain saws. Regular screws plus washers had loosened rapidly under vibration when the saws went to work.

SPIN-LOCK cured this problem, of course. Homelite reports: "We've had no loosening of screws when the saws get out in the woods." And, Homelite goes on, "We also found through time studies that we saved an average of

30% in time required to insert and drive the screws — giving us lower labor cost and faster assembly time." What's more, "The average cost of SPIN-LOCKS and regular screws plus washers is just about the same." Measure of Homelite's satisfaction: the new Model 17 saw uses 79 SPIN-LOCKS in 16 types and sizes.

Whether you want a fastening device with a bull-dog grip or a way to lower assembly time and costs, an RB&W SPIN-LOCK screw could be the answer. It's easy to find out — just write the nearest RB&W office. RUSSELL, BURDSALL & WARD Bolt and Nut Co., Port Chester, N.Y.

4.11



**ONLY 22 LBS.**, Model 17 Homelite Chain saw delivers 3.5 hp — power to spare for felling trees 4 feet in diameter. Cuts up, down, left or right; is easily carried up trees.

Check Sweet's Design File for  
RB&W SPIN-LOCK Catalog

# RB&W Spin-lock

U. S. Pat. No. 2,253,241



**The Tighter, Stronger, Surer Fastener!**

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April 28, 1955

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**"You can depend on friendly help  
from Lamson & Sessions"**

Lots of people know, and you should too, that Lamson specializes in helping companies solve their Fastener dilemmas. It's all part of the valuable extra service that is automatically yours when you call in the Lamson man.

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This is another plus service that leads our customers to say: "It's a pleasure to do business with Lamson & Sessions".



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## Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
Apr. 23, 1955	194,480*	33,645*
Apr. 16, 1955	185,262	33,816
Apr. 24, 1954	133,948	23,762
Apr. 17, 1954	125,645	22,914

\*Estimated Source: Ward's Reports

and outside the company. This is a policy that has been followed by General Motors since the day the corporation was formed.

While each of GM's divisions is an integral part of the corporation, competition between them is very healthy. Each division has a low and high priced product and the higher priced cars match the lowest price of a car in a more expensive range. GM's earnings reflect the wisdom of this policy of overlapping products.

**Boost Fuel Efficiency . . .** The automobile industry this year is doubling its efforts to reduce the amount of unburned fuel in auto exhaust gases. James C. Zeder, Chrysler Corp. vice-president of engineering, said the manufacturers will spend \$1 million this year in their studies, compared to half that amount in 1954.

Studies have shown that at brief periods, when motorists decelerate from high speeds, 60 pct or more of the gasoline may pass through the engine unburned. While idling, some engines allow as much as 25 pct of the fuel to reach the exhaust pipe without burning, although the overall average is only about 4 pct. The least amount of unburned fuel is expelled when engines are accelerating or cruising.

In order to combat this fuel waste, engineers at GM have come up with two methods to achieve the reduction. One is to shut off the fuel temporarily during deceleration. The other is to enable a more combustible mixture of air and fuel to reach the cylinders during deceleration.

Devices based on these two principles are still in the experimental stage but they represent a possible solution to the problem at its source—in the engine.

Altogether, five companies are working on developments to limit fuel waste. Among these are a fuel injection device, after burners and catalytic mufflers. The practical value of these methods has not yet been proved but they represent strong possibilities of a means to eliminate fuel waste.

## Plastics:

### Chrysler now using them for heater housings.

Plastic uses still grow. Chrysler Corp. has found several advantages in using reinforced plastic for its car heater housings. In addition to being durable and lighter, the plastic is not subject to corrosion. Also, because there are no joints requiring gaskets and welding, the possibility of leaks is eliminated.

The housing comes in two pieces, one located in the engine compartment and the other on the passenger's side. Tests have shown that plastic covers give out 8 to 10 pct more warmth than conventionally covered heaters.

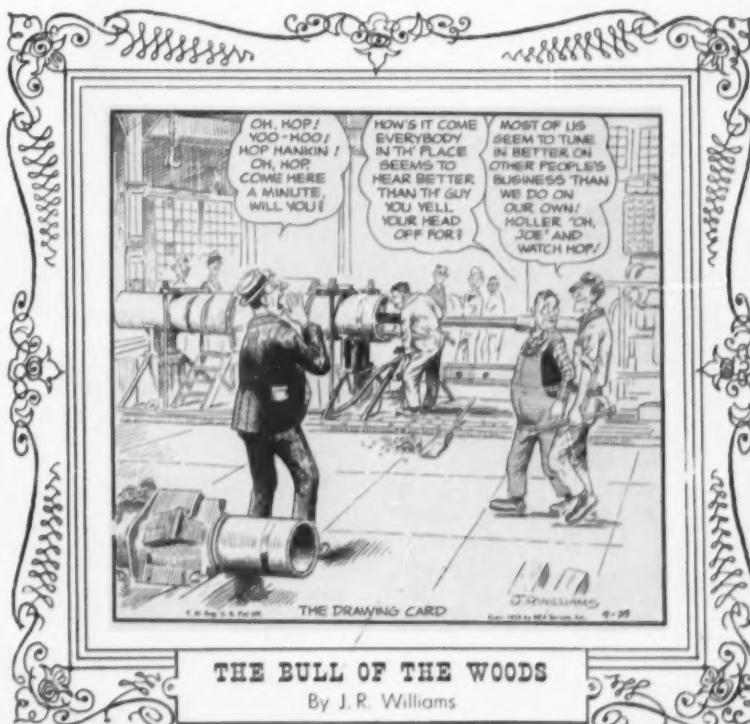
## AUTOMOTIVE NEWS

Chrysler plastic is made from a compound of sisal and glass fibers, combined with polyester resin. As a result, Chrysler has become the nation's largest industrial user of this type of plastic. Consumption is at the rate of more than 26 tons a day.

Beside heater covers, the corporation also uses molded reinforced plastic for interior air vents for car air conditioning units, station wagon trim moldings and in plastic dies for stamping out parts from steel. Plastic cars may come yet.

## Committees Rule

The trend toward management teams rather than one man control has become quite pronounced, particularly since the latest mergers between automobile companies have taken place. One man control might have been satisfactory at one time but history has proven that in the long run it is not a good practice or good psychology.





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 COAST TO COAST



THIS WEEK  
IN  
WASHINGTON

## Democrats Cook Up Business Probes

**Plan large scale investigations of General Motors . . . Don't expect to find any illegal operations . . . Idea is to picture GOP as business dominated, sell Dems as defenders of little fellow—By G. H. Baker.**

◆ **INVESTIGATION** of General Motors is in the making on two Capitol fronts. Both the Senate and the House are preparing to fire big rounds of ammunition at the multimillion dollar corporation. Their aim: Try to show that the Eisenhower Administration and the Republican Party are "dominated" by big business.

Democrats in charge of organizing the upcoming investigation admit privately that they can't make any such charge as "domination" stick, but they expect to push over a few Republican outhouses and otherwise make as much political mischief as possible in the hope of recapturing the White House next year.

Present plans indicate that the probe will surpass anything attempted before in the line of "monopoly" investigations. Sen. Kilgore, D., W. Va., is in charge of the proceedings in the upper chamber, while Rep. Celler, D., N. Y., will direct the House investigation of GM.

**Plan Broad Probe . . .** Among the topics to be worked over in the course of the coming investigation: Automotive parts and accessories, steel, aluminum, rubber, nylon, dealer relationships.

Privately, most Democrats say they know of nothing illegal about GM's tremendous size and the scope of its far-flung operations. But for political reasons it is fashionable this year and next for politicians to beat their chests and speak loudly of their affection for "the little fellow" and of their bravery in attacking giant cor-

porations. Whether or not the voters will be impressed remains to be seen. It's to be purely a political exhibition.

**Agree on Aid . . .** President Eisenhower's new program for sending economic aid to the non-Communist Orient appears headed for a minimum of trouble from Congress. There's widespread agreement among members of both parties that the free nations of southern and eastern Asia stand a good chance of remaining free only if the United States extends stout assistance—financially and economically, as well as militarily.

Critics of foreign-aid programs point out that Asia already has received nearly \$10 billion in aid from the U. S. in the past 10 years, and they ask cynically if Asia could possibly be in any worse mess than it is today. The largest share of this \$10 billion has been handed out in the past 3 years.

Mr. Eisenhower said last week



"Better put that load back, Henry."

the U. S. is "ready to intensify its cooperation with the free nations of south and east Asia in their efforts to achieve economic development and a rising standard of living." He points out that the U. S. is committed to a policy of independence and self-determination for all people, and mentions the Philippines as an example.

**Spread Defense Work . . .** Farm out more defense work to subcontractors, the Navy tells its prime contractors. Naval procurement officers, with Congress and small-business groups breathing down their necks, are urging big manufacturers to take on more subcontracting "or we'll both be in trouble."

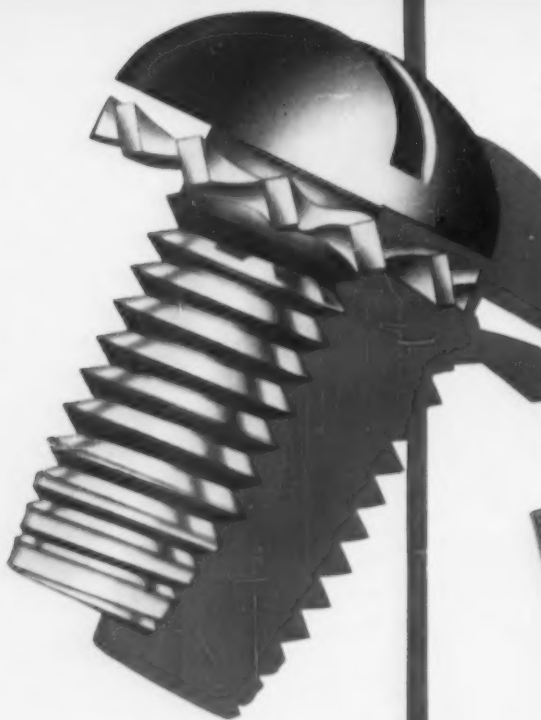
As big defense contractors find unused capacity within their plants, they naturally try to take up this slack by performing their own smaller chores instead of farming them out. This situation drains away orders from subcontractors. Squawks to Congress then result, and many a conscientious naval officer and prime contractor now finds to his astonishment that he's charged by politicians with "favoritism" toward "big business."

This is often a completely unfair, politically-inspired charge and makes life tough for Naval procurement officers. They figure their only "out" is to pass a warning on to prime contractors.

**More Go Broke . . .** The fiscal year beginning next July 1 may see the "highest number of bankruptcies recorded in the history



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Reduce Costs . . . eliminate part losses



These days, when production savings can mean the difference between profit and loss at the end of the year, it will pay you to examine the efficiencies offered by Eaton-Reliance Springtites® and Sems. With the spring lock washer as an integral part of the screw or bolt, it is no longer necessary to assemble the two before application. Easier and faster assembly of bolted parts is the result. Waste, through loss of separate lock washers and screws, is reduced. Eaton-Reliance Springtites® and Sems are engineered to speed up your assembly time and give you more efficient fastenings for less.



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of the country," the House Appropriations Committee forecasts in approving funds for the government bankruptcy services.

During the current fiscal year, the committee said, some 65,000 bankruptcy cases will be filed, and it said it expects an increase to 75,000 next year. It did not elaborate on the observation, but a spokesman said the figure includes farm, personal and other nonbusiness failures as well as business bankruptcies.

A business reporting firm, commenting on the statement, said records show there were 11,086 business failures in 1954, and the rate was about the same for the early months of 1955. But the firm noted that business and nonbusiness failures usually follow the same trend.

### Plan Atomic Study

Puget Sound Utilities Council, composed of five utility organizations in Washington State, will conduct a nuclear power study under authorization of the Atomic Energy Commission.

Participating in the study will be the Department of Lighting of the City of Seattle, the Light division of the City of Tacoma, the Puget Sound Power and Light Co. of Seattle, and the Public Utility Districts of Snohomish and Clallam Counties. The utilities serve a total of about 500,000 customers with a combined peak load of about 1.5 million kilowatts.

Purpose of the study is to determine the nuclear power system or systems most practical for construction in that area and to estimate when construction and operation will be economically feasible. The Council will establish offices in the office of the Puget Sound Power and Light Co. at Seattle.

### U. S. Ups Steel Bite

Steel will be in somewhat heavier demand for defense and atomic energy uses during the July-September quarter, while requirements for copper and aluminum will decline from present levels.

Prime contractors and producers of military and atomic energy

equipment are to be allotted 696,958 short tons of steel during the coming quarter. The quantity is just over 2 pct more than 681,003 tons set aside for this quarter.

Copper and copper-base alloy allotment will drop 7 pct to 57.3 million lb, compared with the present 62 million lb. Aluminum allocation will decrease from 109 million lb to 106.2 million lb, for a drop of about 3 pct.

Additional amounts of steel, copper, and aluminum will be set aside at mill levels to provide for production of civilian-type items which are incorporated into military end items.

## Railroads:

**Freight rates, car building get close look.**

Rail car production and freight rates for all carriers are coming in for a close look in Washington. Measures to step up carbuilding and ease freight regulations are being studied.

The White House is now considering a national transport policy designed to permit freer competition among carriers. Under the proposed policy, Interstate Commerce Commission would merely decide maximum and minimum rate levels instead of setting precise charges.

Proposed changes include curbing of ICC suspension powers; modification of laws governing short and long hauls; approval of volume freight rate arrangements. Railroads feel their competitive position would be improved by the rate leeway granted. Truckers see rate warfare resulting.

### Need More Cars

In a separate action, railroads are asking that temporary freight increases granted in 1952 be made permanent. Due to expire next December, increases amount to about 15 pct on most items. The railroads cite rising costs and declining traffic as factors calling for increase retention.

On the question of rail car production, the Office of Defense Mobilization is studying means of providing adequate rail transpor-

## WASHINGTON NEWS

tation for emergency traffic. ODM is worried over the fact that production and retirement figures last year showed a net loss of 42,000 cars.

More recent figures indicate the picture may be brightening. Delivery of new freight cars rose in March for the second straight month and orders for new cars continue to show strength. However, the March delivery figure of 2833 cars is only about half the total for last year at this time. Fast tax write-off certificates are helping the situation a little as reports show more companies are availing themselves of this saving.

### Offer Atomic Data

Private and organizational access to classified atomic energy data of a non-military type is to be simplified under a new Atomic Energy Commission program.

Non-military information described as "confidential, restricted data" will be made available to any person who can show a probable use for the data in his business. He will also need a simplified security ("L") clearance and agree in writing to abide by all AEC security rules.

Illustration by Dan Linn



"I'm not concerned with your FIRST wife's labor policies, Bently."



**standard for comparison  
...and with high speed steels  
the standard is REX**

Living up to a standard for comparison isn't easy. That's why Crucible lavishes special care on the manufacture of REX® high speed steels...to keep REX the *standard* wherever high speed steels are used—as it has been for over half a century.

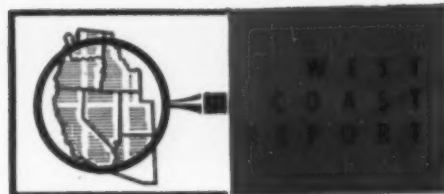
It's easy to *prove* the superiority of REX. Use it on the job...check its size, structure, response to heat treatment, fine tool performance. You'll agree with thousands of other users—you *can't find a high speed steel to outperform REX.*

Remember, REX is made only by Crucible. So call for REX at any Crucible warehouse, or for quick mill delivery. *Crucible Steel Company of America, Henry W. Oliver Building, Pittsburgh 30, Pa.*

**CRUCIBLE**

first name in special purpose steels

**Crucible Steel Company of America**



## Mathematicians Study Steel Planning

**UCLA translates steel plant production to mathematical terms . . . Equations and computers take over advance planning . . . Could improve mill efficiency . . . Gadget measures L. A. smog—By R. R. Kay.**

♦ **STEEL MILL** production planners may soon have a new tool. Mathematical formulas fed to high-speed computers are ready for them to try out.

Any steel mill can apply this new method. Impressive savings could well be in the cards.

Steelmen, with the push of a few buttons, would be able to find out what each mill department should produce, at any given time, at minimum cost. And meet delivery dates, too.

The method aims to tell the effect on production schedules of: changes in prices of materials; changes in delivery dates; rush orders; heats of steel which don't meet specifications; and equipment breakdown.

### Computers Make Decisions . . .

Although each department in a steel plant tries to keep its production costs down, its efforts may not result in the best possible production program for the whole plant. The new method could well be the answer to this problem.

Economists, engineers, and mathematicians at the University of California at Los Angeles are translating typical steel plant production processes to mathematical terms. They think these terms, teamed up with high-speed computers, could help production planners make faster, more accurate decisions on complex planning and scheduling problems: minimum cost blast furnace burden and openhearth charge; optimum rolling schedule; and optimum inventory of intermediate products such as ingots, blooms.



**DETECTOR** measures L.A. smog by use of ultraviolet light beam. Unit shows air ozone content.

The method is applicable to any steel plant, whatever its size or type of operation. Cost promises to be less than that of present-day methods.

Buying costly computing equipment is not a must. Rental will do.

And in any national emergency, the new approach could well prove a boon to mobilization planners. With speed and precision, the steel industry would know its capacity to turn out specific end products.

"Mathematics will in the future become an essential tool of steel plant management in increasing productivity, improving reliability of delivery dates, and running rush orders through the plant," Dr. Tibor Fabian, economist on the Management Sciences Research Project, told THE IRON AGE.

The project of presenting steel mill problems in terms of linear programming is sponsored by the Office of Naval Research.

**Measure Ozone . . .** Continuous ozone-measuring device, now operating in Los Angeles, promises big advances in the nation's march on air pollution.

Duplicates will cost about \$6000. The new instrument works automatically and takes readings every 15 min on a 24-hr basis.

"(It is a) historic chapter in the battle against smog . . . Soon we will know accurately how much poisonous ozone there is in Los Angeles' smoggy air . . . by making actual measurements with the new instruments in various portions of the Los Angeles Basin, we will find out where most of the concentrations of ozone occur . . . the remaining two problems—what causes ozone and how can we get rid of it—will be well on the way to solution." This good news is from Dr. Lauren B. Hitchcock, president and managing director, Air Pollution Foundation, Los Angeles.

The instrument has a projector and receiver, set 300 ft apart. Ultraviolet rays are shot across the distance. The instrument measures how much ultraviolet light is left after it crosses the path of ozone molecules. With this data, it's possible to figure how much ozone's in the air.

**New Business . . .** Kaiser Steel Corp., Oakland, Calif., got a 52,000-ton pipe order from Southern Pacific Railroad for oil product pipe.

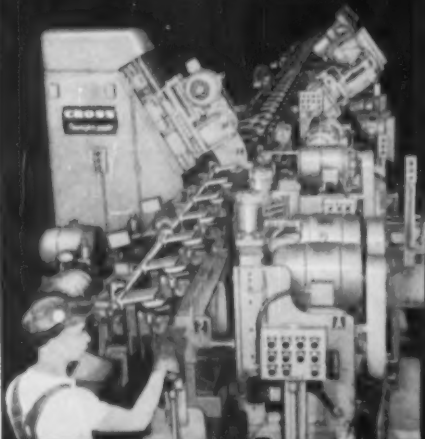
**Warner  
Gear  
Reduces  
Downtime  
with  
Cross Machine  
Control Unit**

*A Mechanical Eye...*



(U.S. Patent Nos.  
2679038 and D. 163935  
Others Pending)

At right, set-up man pre-sets tools at Warner Gear Division, Borg-Warner Corp. for Transfer-matic below.



"We are well satisfied with the results we have obtained from the Cross Machine Control Unit," says Emory Watson, Master Mechanic of Warner Gear Division of Borg-Warner Corporation.

Warner Gear's experience is typical of many users. Over 500 Cross Machine Control Units are successfully reducing costs of many metal cutting operations. Here's why:

Toolometers on the Machine Control Unit assure improved tool changing programs and maximum tool efficiency. Tools—pre-set with standard fixtures and gages to eliminate machine adjustments and trial cuts—are stored in the Machine Control Unit convenient and ready when needed. Results: Reduced tool costs . . . less downtime . . . higher operating efficiency. You can get the same cost saving benefits as Warner Gear. Write, wire or phone The Cross Company for full information, today.

Established 1898

THE **CROSS** CO.  
DETROIT 7, MICHIGAN  
*Special* MACHINE TOOLS





## U.S. Rounds Out Tooling Program

Equipment for ship turbine industry will cost \$64 million . . . Pool of 87,000 machines now assures high emergency output . . . ODM says leasing policies avoid unfair competition—By E. J. Egan, Jr.

♦ **GOVERNMENT** will soon buy \$64 million worth of machine tools and facilities for installation in the ship turbine industry as part of the mobilization planning program.

Dr. Arthur S. Flemming, director of the Office of Defense Mobilization, says he plans to instruct General Services Administration to order the machine tools as soon as he has officially informed several congressional committees.

The purchase was recommended by the Advisory Committee on Components and Production Equipment headed by Harold S. Vance. The tools are said to be needed to correct a "critical" deficiency of emergency productive capacity in the turbine and turbine gear industry.

**Boilermaker Buys Pend . . .** Another shortage was uncovered in emergency capacity to produce high pressure steam boilers. But a decision to buy the necessary tools to make up the deficit is still pending. ODM officials have the borrowing authority to beef up this industry's facilities if they wish.

In reviewing the machine tool mobilization program, Dr. Flemming says that all deliveries under the pool order program, initiated in 1951, have been completed. This adds up to some 87,000 equipment items valued at \$1.1 billion. Of this total, all but 832 machines, valued at \$10.9 million, were bought by private industry.

**Industry Rebuys Tools . . .** Of the 832 tools acquired by the government, 152 valued at \$1.9 mil-

lion were resold to industry. This leaves 673 pool order tools in government storage.

In the area of tool leasing for nondefense purposes, Dr. Flemming cites the record since October 1953, when the ODM announced its intention to scan all requests most carefully. Since the ODM order was issued, some 63 nondefense firms have asked permission to lease 1082 tools valued at \$14.9 million. ODM approved leasing of 377 tools worth \$2.8 million to 11 firms. But requests from the other 52 firms were denied.

**Deny Cut Rates . . .** The ODM director also asserts that government rates of 16.3 pct for a typical

5-year machine tool lease are comparable to charges prevailing in competitive enterprise. He says that an American Machine Tool Distributors Assn. survey on commercial leasing rates is the authority for his assertion.

ODM is also taking stock of elephant tools owned by private industry to see if a defense emergency shortage exists in this category. Survey to date shows that 71 firms operating 133 plants have 867 of these long-leadtime tools on hand. Twenty-five pct of the machines are less than 10 years old and 50 pct are less than 20 years old.

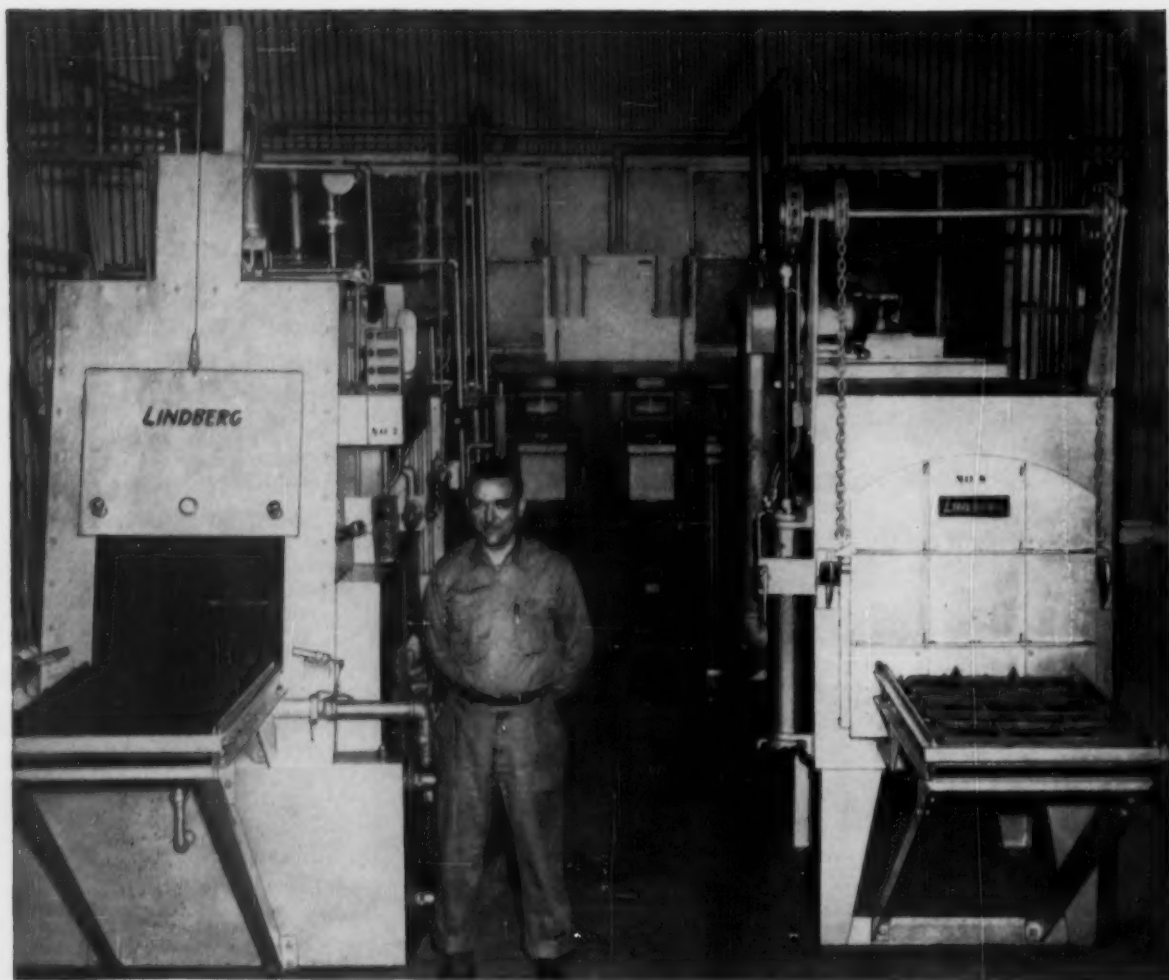
**Says Union Boggles . . .** Two engineering experts told the CIO to stop boggling over the spread of automation, and to encourage its growth instead. Both John Diebold, head of a New York consulting firm, and Donald Campbell, Massachusetts Institute of Technology electrical engineering professor, assured a CIO conclave in Washington that more and better jobs are in sight as a direct result of the spread of automation.

CIO President Walter Reuther called the Washington meeting to generate some ideas on how unions can "cope" with automation. But the engineers told Reuther that labor could best serve its own interests not by "coping" with automation, but by promoting its use.

By a 91 pct favorable vote, stockholders of Mackintosh-Hemphill Co. have approved sale of the firm's assets to the E. W. Bliss Co. Mackintosh-Hemphill will continue to operate as a Bliss Co. division.



"Once in a while he comes up with a great production idea."



## VITAL QUALITY CONTROL PERFECTED WITH LINDBERG FURNACES

Carburization zero! Decarburization zero! Oxidation zero! Laboratory reports show that Lindberg Endothermic atmosphere generators maintain absolutely neutral atmospheres for production and tool steels run at Calmec Manufacturing Co., Los Angeles, California.

The Lindberg atmosphere generators and a number of Lindberg furnaces were installed by Calmec in a program to improve quality control. The results more than justified the installation of this new equipment.

Rejected parts and finishing operations following heat treating have

both been substantially reduced. Parts which formerly required a heavy grind to remove distortion from heat treatment are now virtually free of warpage and can be assembled after only a light finishing operation. Important time savings have also been realized.

You can easily get results like this by using Lindberg atmosphere furnaces. We provide you with furnace atmosphere equilibrium curves to obtain precise carbon control on any type of steel.

Write for our Bulletin No. 241, or contact your nearest Lindberg field office for full details.



*Wilbur R. Varney, Superintendent of the Heat Treating Division of Calmec Manufacturing Co., says:*

"Since installing the Lindberg equipment, not one of the independent laboratory analyses we have received has deviated from carburization zero, decarburization zero, or oxidation zero. Our work ranges from such steels as 4130 to 52100. For aircraft areas, such as Los Angeles, this is a very important factor."

**LINDBERG  FURNACES**

Lindberg Engineering Company, 2452 West Hubbard Street, Chicago 12, Illinois



## 40 YEARS of quality metals . . .

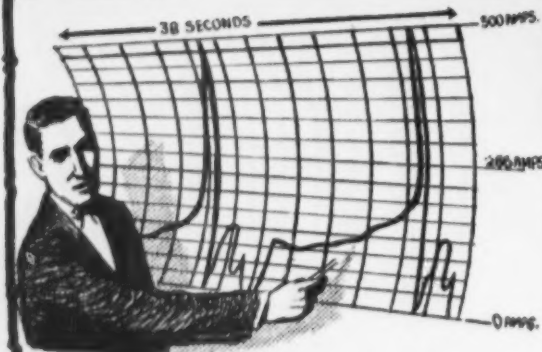
1955 marks 40 years of quality alloys by Titan metal specialists. Brass and bronze free-cutting rods, extruded brass shapes, bronze welding rods, brass wire, aluminum and brass hand screw-machine parts, brass pressure die castings, brass, bronze and aluminum forgings are produced to meet high standards and rigid requirements. Titan Metal Manufacturing Co., Bellefonte, Pa. Offices and agencies in principal cities.

# FACTS ABOUT Exide®

## IRONCLAD® INDUSTRIAL TRUCK BATTERIES

### NO MOVING JOB IMPOSSIBLE!

STEEP RAMPS, LONG HAULS, HEAVY LOADS... NO JOB IS IMPOSSIBLE WHEN ELECTRIC TRUCKS ARE POWERED WITH IRONCLADS. EXIDE MAKES BATTERIES WITH ADEQUATE CAPACITIES TO KEEP TRUCKS WORKING FULL-SHIFT...WITH NO LET-DOWN IN TRUCK POWER OR PERFORMANCE. USER COST RECORDS SHOW THAT EXIDE-IRONCLADS ARE YOUR BEST POWER BUY—AT ANY PRICE!



### PORTRAIT OF AN EXIDE WORKING

IN JUST TWO MOVES AND 30 SECONDS A FORK TRUCK MAY DRAW ENERGY FROM ITS BATTERY IN THIS PATTERN, IN RESPONSE TO 44 SEPARATE CONTROLLER OPERATIONS, IN AN 8-HOUR SHIFT, 3000 SUCH DEMANDS MAY BE MADE. EXIDE-IRONCLADS ASSURE RAPID, ACCURATE HANDLING OF MATERIAL... THEY RESPOND INSTANTLY TO THESE RAPIDLY RECURRING DEMANDS FOR HIGH POWER FOR SHORT DURATIONS.

LET EXIDE HELP SOLVE YOUR INDUSTRIAL TRUCK BATTERY PROBLEMS. ① CALL AN EXIDE SALES ENGINEER FOR FULL DETAILS. ② WRITE FOR FORM 1982, A MANUAL ON INSTALLING AND MAINTAINING MOTIVE POWER BATTERIES.

### TUBES OF POWER WORK FOR YOU INSIDE AN IRONCLAD

SLOTTED TUBES INSIDE AN IRONCLAD KEEP ACTIVE MATERIAL IN FIRM CONTACT WITH CONDUCTING GRIDS OF THE POSITIVE PLATE...THIS GRID PROTECTION LENGTHENS THE LIFE OF THE BATTERY. SLOTTED TUBES EXPOSE MORE ACTIVE MATERIAL TO THE ELECTROLYTE... FOR GREATER POWER, FINE TUBE SLOTS HOLD MATERIAL IN CONTACT WITH GRID LONGER...RESULT, THE IRONCLAD'S ABILITY TO DO YOUR MATERIALS MOVING JOB FOR A LONGER PERIOD OF TIME. THAT IS WHY EXIDE-IRONCLADS ARE YOUR BEST INDUSTRIAL TRUCK BATTERY BUY—AT ANY PRICE!

PROTECTED CONDUCTING GRID  
COMPRESSED ACTIVE MATERIAL  
SLOTTED RETAINER TUBE



**Exide INDUSTRIAL DIVISION**, The Electric Storage Battery Company, Philadelphia 2, Pa.





## The Iron Age

# SALUTES

**Edward C. Hoenicke** Whirlwind energy plus sales and technical savvy have made him a crack foundry executive and enabled him to run a three ring campaign for advancement of the whole industry.

"If the 10 busiest men in the foundry industry are ever named, Ed Hoenicke will account for half the list." This recent comment isn't too far off in picturing the general manager of the foundry division at Eaton Manufacturing Co.

Here's a partial rundown of Ed's activities: Director of American Foundrymen's Society; member of the Cupola Research Project; member of committee A-3, American Society for Testing Materials; member of the budget and finance committee, Gray Iron Founders' Society; past president of the Gray Iron Research Institute; past chairman of the Detroit chapter, American Foundrymen's Society.

Add these up, throw in an impressive record of government service, and you have some idea what Ed Hoenicke does with his spare time.

Ed's massive workload is a tribute to his energy and to his appreciation of the need for industry-wide progress. His success in company and industry functions stems from a happy combination of talents. He is a top notch

salesman, an able administrator and a technical expert. He likes people; he knows how to get things done in group work.

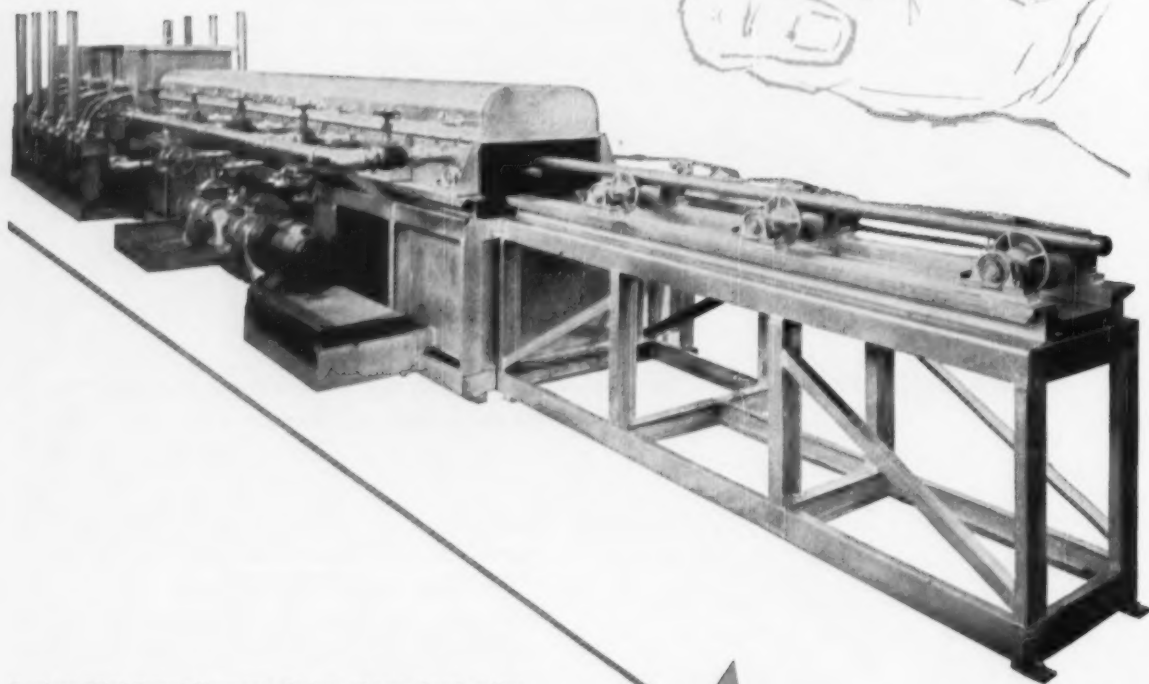
Ed was born in Grand Rapids, Mich., and attended Cass Technical School in Detroit. He became interested in foundry work in school and went into the industry, concentrating on the permanent mold process in which he is now a leading authority.

In 1933, after a period that included foundry expediting at General Motors, Ed was appointed sales engineer for Holley Permanent Mold Machine Co. When Eaton Manufacturing bought Holley in 1945, he was appointed general manager of the foundry division. His capable leadership shows up in the buzzing operations of Eaton's permanent mold factory at Vassar, Mich.

Ed plays a little golf. He bowls regularly during the winter months. But bowling, golfing or working, his thoughts and talk tend to center on the bright future he sees for a well informed, aggressive foundry industry.

## stress relieving at 120 feet/minute

20-foot welded steel tubes travel through this Surface Combustion High Speed Furnace with stop-watch precision at the speed of 120 feet per minute, fast enough for any production line. Such speed requires high heat input (the tubes heat to 650°F. in 6 seconds) which, in turn, demands split-second control of the "time exposure" in the heating chamber. This presents the kind of heat engineering and materials handling problems with which Surface has had such long and productive experience.



Surface High Speed Furnaces fit into the production line, eliminate heat treat bottlenecks. They are designed in many sizes for a wide range of processes on ferrous and non-ferrous metals. They can be automatic or semi-automatic, gas or oil fired. Write for Literature Group H53-5 and see how these "hot-rod" furnaces can give you savings in heating time, equipment cost, fuel, maintenance, floor space, metal, and labor.



**SURFACE COMBUSTION CORPORATION • TOLEDO 1, OHIO**

ALSO MAKERS OF

**Kothabar** HUMIDITY CONDITIONING **Janitrol** AUTOMATIC SPACE HEATING

## The Iron Age INTRODUCES

Harvey M. Snook has been appointed comptroller, **Tennessee Coal & Iron Div., U. S. Steel Corp.**

Harold A. Olson, elected commercial vice-president, **General Electric Co., New York.**

R. James Trane, elected executive vice-president of **The Trane Co., La Crosse, Wis.** Also elected executive vice-presidents were **Wayne J. Hood** and **Thomas J. Hancock**. **Richard H. Pearce, Sr.**, was named vice-president.

A. L. Davis, named president of the **Pennsylvania Engineering Corp., New Castle, Pa.** He succeeds **William S. Wheeler**, who becomes chairman. **Clark Rossiter** becomes executive vice-president and general manager. **P. M. Patteson** was named vice-president and secretary.

Walter C. Bergstrom, named president of **The Weldon Tool Co., Cleveland.** **Carl A. Bergstrom**, former president, becomes chairman. **Paul R. Hatch** was named executive vice-president.

C. H. Kibler has been promoted to general traffic manager and **Neil Robertson** to assistant general traffic manager, **Boiler Div., Babcock & Wilcox Co.**

Torrence M. Hunt, named advertising manager for **Aluminum Company of America.**

Arthur E. Bayley, promoted to credit manager, **Pittsburgh Steel Co., Pittsburgh.**

Charles H. Eisenhardt, Jr., named Cleveland district sales manager, **America Steel & Wire Div., U. S. Steel Corp.** **Vernon W. Heimberger** moved to post of manager, electrical product sales and **George C. Brandle** to director, central area electrical sales. **Wilford L. Milliren**, named Chicago district supervisor, production planning.

Donald L. Rossiter, appointed assistant general manager, sales, engineering products, **Inland Steel Products Co., Milwaukee.**

H. M. Thomas, appointed general superintendent of the new pipe mill, **Consolidated Western Steel.**

Hugh F. Lacey, appointed traffic mgr., **Ryerson Steel Co., Chicago.**

**Crucible Steel Co.** has appointed **Herbert J. Arnold** supervisor of stainless, bar, wire and billet sales. **Frank J. Coates** was appointed supervisor of stainless steel sales, **Cleveland.**

A. S. Marvin, named assistant chief engineer, contracts, **American Bridge Div., U. S. Steel Corp., Pittsburgh.** **William K. Greene**, appointed assistant chief engineer, contracts, and **F. Kent Goodell**, named division engineer, **Pittsburgh engineering office.** **Albert H. Swift**, named assistant division engineer, **Chicago.**

E. Avery Williams, Jr., appointed manager of operations, **North American Refractories Co., Cleveland.**



L. K. STRINGHAM, appointed vice president in charge of Engineering, **The Lincoln Electric Company, Cleveland.**



E. A. NEAL, elected vice president—domestic sales, **Nicholson File Company, Providence.**



PAUL R. GROSSMAN, appointed director of research, **Babcock & Wilcox Company, Alliance, Ohio.**



LARS E. EKHOLM, appointed manager of sales division, **Climax Molybdenum Company, New York.**

**William F. Schupp**, appointed district sales manager, **Republic Steel Corp.**, St. Louis district.

**Samuel C. McDowell**, named division manager, Pressed Steel Div., **Republic Steel Corp.** **Theodore G. Humphrey** has been named container sales manager and **Frank F. Malcher** has been named sales manager.

**John Sherwin**, named senior managing partner, **Pickands Mather & Co.** Partners **H. C. Jackson** and **A. D. Chisholm** were named managing partners. Sherwin was elected president of **Interlake Steamship Co.**; **Jackson** and **George Callahan** were named vice-presidents; **E. C. Brunner**, treasurer, and **J. E. Harkness**, secretary.

**C. D. Howe**, named manager, bolt and nut sales, **Bethlehem Pacific Const Steel Corp.**, San Francisco.

**L. C. Berkey**, appointed director of purchasing, customer relations, **Jones & Laughlin Steel Corp.** **Robert B. Algie**, promoted to assistant manager, Hot Rolled Products. **D. T. Rogers**, mgr., Cold Finished Products. **W. K. Breeze**, mgr., district sales office, Detroit. **Walter F. Donaldson, Jr.**, mgr., Cincinnati office. **Howard M. Knobloch**, assistant district sales mgr., New York, and **Robert L. Pierce**, district sales mgr., Buffalo. **Simon Feigenbaum**, named chief industrial engineer. **George G. Blean** succeeds Mr. Feigenbaum as chief metallurgist, Pittsburgh Works. **Richard C. Lukehart** has been named chief accountant, Monarch Steel Div., Hammond, Ind. **Walter H. Babbitt, Jr.**, has been named to the newly created post of supervisor of accounting warehouse div. **Jackson D. Allen**, named mgr. of Cleveland warehouse. **Norbert E. Willkomm** has been named sales mgr. for the Cleveland warehouse.

**Frank M. Wise**, appointed assistant to general superintendent, manufacturing, Homestead District Works, U. S. Steel Corp.

**Edward E. McGinley**, appointed assistant general superintendent, U. S. Steel's Edgar Thomson Works.

**Lewis D. Cisler**, appointed manager of sales, **Republic Steel Corp.**, Culvert Div., Canton, Ohio. **Homer A. Wilson**, appointed assistant division manager, C. W. Pfeiffer becomes assistant manager of sales.

**T. M. Lambert, Jr.**, appointed manager, **Cooper-Bessemer** Shreveport Office.

**Firth Sterling, Inc.**, has appointed **Carlisle R. Henry** as carbide service engineer, Chicago district.

**Thomas W. Harman**, appointed manager, order and service department, **Republic Steel Corp.**, Union Drawn Steel Div.

**William M. Williams**, appointed manager of the **Chrysler** Detroit Tank Plant.

**Harold O. Warnock**, appointed chief plant engineer, **Firth-Loach Metals Inc.**, McKeesport, Pa. **Jack H. Powers** appointed superintendent of X-ray and metallography.

**W. P. Perkinson** has been appointed sales manager for **American Chain & Cable Co.**, Philadelphia district.

**Robert A. Troman** has been appointed sales manager of the Tower Dept., Equipment Div., **Blaw-Knox Co.**

**H. M. Dess** joins the staff of **Electro Metallurgical Co.'s** metals research laboratories.

**Douglas A. Hopper** has been named general manager of the Welding Dept., **General Electric Co.**, York, Pa.

**Richard A. Schaus**, of Schenectady, N. Y., has been named manager of induction and miscellaneous equipment engineering for the Industrial Heating Dept., **General Electric**.



**C. C. FULLER**, elected vice-president, **Foxboro Company**, Foxboro, Mass.



**H. O. EHRISMAN**, elected general sales manager, **Foxboro Company**, Foxboro, Mass.



**WILLIAM O. SWEENEY**, elected vice president in charge of sales, **Arwood Precision Casting Corporation**.



**ALBERT J. ANDERSON**, appointed erecting manager, U. S. Steel Corp., American Bridge Div.





#### HELICAL, TAPER, OR STRAIGHT

involute splines like these are rolled in a few seconds. ROTO-FLO spline roller forms accurate splines up to thirty times faster at lower cost. (Bulletin RF-54.)

## *This Month's* **GEAR PIX**



#### **GEAR DEVELOPMENT LABORATORY**

at Michigan Tool is dedicated to the task of helping gear manufacturers in their constant quest for better methods to make better gears at lower cost. Tooling and processes from blank to finished gear for both production and experimental gears are developed here.

## **MACHINE TOOL SHOW** AT CHICAGO - SEPT. 6 THRU 17



**HOBBER "THINKS" FOR ITSELF**, keeps records on production, shifts the hob, adjusts hob-gear center distance for correct gear size, shuts down for helix errors, loads and unloads—all automatically. This new, completely automated 1445 Ultra-Speed gear hobber hydraulically crossfeeds the hob at the helix angle of the gear. (Bulletin LH-54.)

### **MICHIGAN TOOL COMPANY**

7171 E. MICHOLDS RD. • DETROIT 12, MICH.  
IN CANADA: COLONIAL TOOL CO., LTD.

# LIFE STEPS UP AT 40!



Sure we've been making stampings for 40 years! . . . But we're going up the hill faster than ever!

Expanded facilities! . . . Newer equipment! . . . Wider diversification! . . . Even more customers—and from every major industry!

The mere fact that we're the nation's best-known job stamping manufacturer . . . shows how we've progressed.

Now . . . as our life steps up at 40 . . . would be a good time to let us do a bang-up job for you, too!



**DETROIT STAMPING  
COMPANY**



America's Best-Known

Job Stamping Manufacturer

345 Midland Ave., Detroit 3, Mich.

**William F. Moore**, appointed manager, marketing, **General Electric Co.'s Aircraft Accessory Turbine Dept.**, Lynn, Mass.

**Robert M. Snyder** and **Wilfred G. Shedd**, appointed sales engineers, **Chicago, Surface Combustion Corp.**

**R. W. Rawlins**, recently appointed district manager of **Lindberg Engineering**, Dallas, Tex.

**Westinghouse** has named **Arthur G. Tichenor** as manager of manufacturing, **Industrial Products Div.**

**M. M. Randle** has been appointed roll bonding market development manager, and **H. A. Ball** quality control manager of the **Metals Div. of Olin Mathieson Chemical Corp.**

**Frank L. Wood**, appointed assistant to the general manager of manufacturing of **Inland Steel Products**, Milwaukee. **Frederick E. Wood** was named Milwaukee plant manager.

**Allegheny Ludlum Steel Corp.** has named **Jack S. Loynd** to the newly created post of industrial relations counsel.

**G. J. Doss**, named manager of marketing, **The Electric Products Co.**, Cleveland.

**Chester W. MacArthur**, appointed manager of the Washington, D. C., offices of **Continental Can Co.**

**Richard F. Harrington**, recently appointed chief development engineer of **Aetna Ball and Roller Bearing Co.**, division of **Parkersburg-Aetna Corp.**

**John F. Haines** has joined **American Locomotive Co.** as chief development engineer, atomic products.

**S. J. Dougherty** has been named assistant chief metallurgist, strip mills and steel works, quality control dept., **Weirton Steel Co.**, and **H. F. Leuthke** has been named assistant chief metallurgist, tin mill and sheet mill.



**JOHN C. ELMBURG**, appointed assistant general sales manager, **Sales, Fairbanks, Morse & Co.**, Chicago.



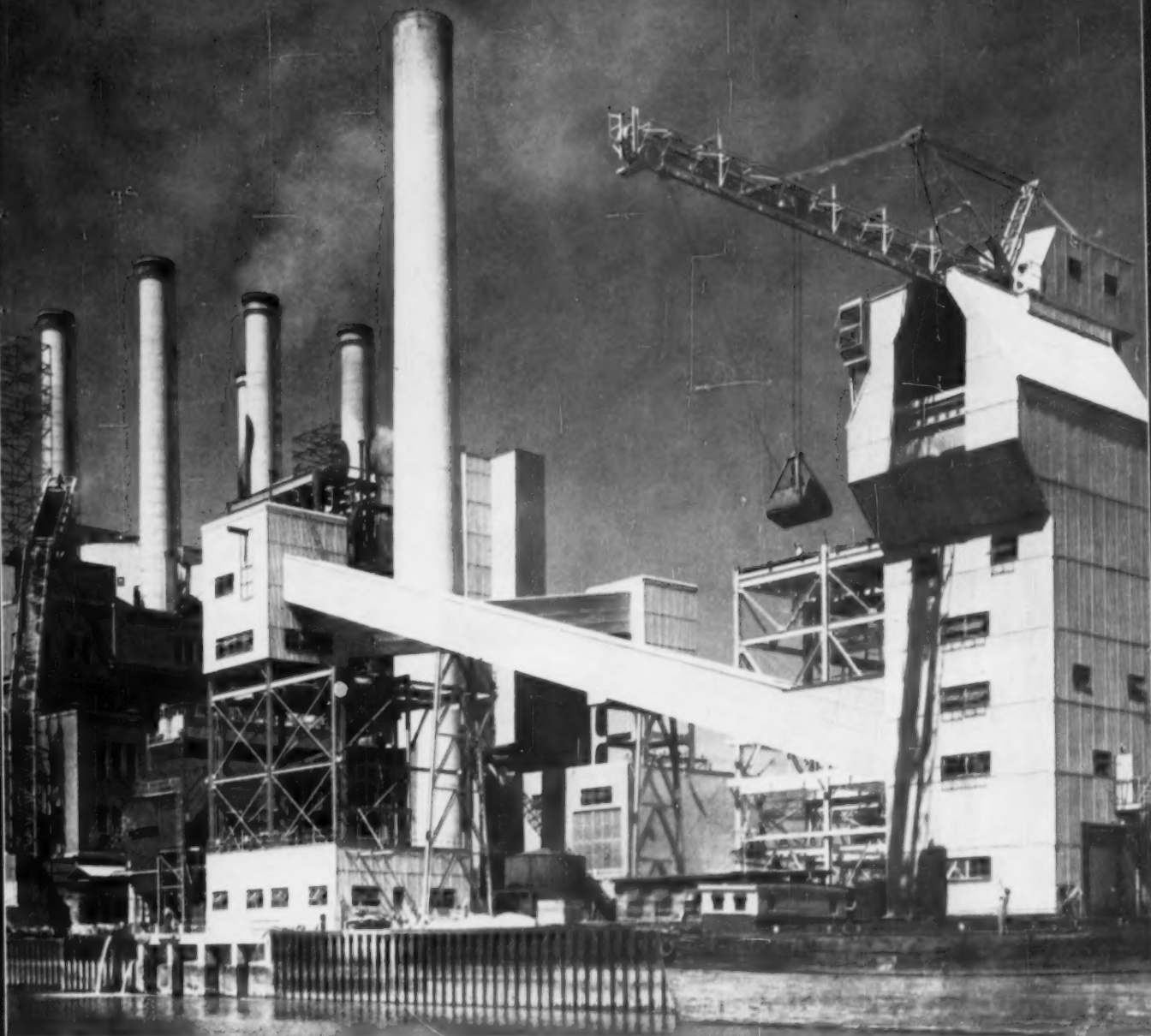
**FRANK V. TERRELL**, appointed general superintendent, **National Tube Co.**, McKeesport, Pa.



**J. W. ROBINSON**, promoted to assistant general manager of sales, **J & L Steel Corp.**, Pittsburgh, Pa.



**J. E. PIERCE**, appointed manager, **Hot Rolled Products Div.**, **J & L Steel Corp.**, Pittsburgh, Pa.



**EASY PICKUP** describes job done by powerful Clyde Unloader. Standing 100 feet high with lifting range of 100 feet, this Clyde giant is rated at 300 tons per hour.

## New steel stevedore unloads 5 tons of coal every minute!

This giant new Unloader was built for the Long Island Lighting Company's new Glenwood Station by Barium's Clyde Iron Works in Duluth, Minn.

Since this recent installation, the Clyde Unloader has outsold all other makes in its size and capacity — on the strength of its modern design and unusual efficiency.

It's the latest in the string of solid achievements which stud the 10-year growth record of the Barium team — from a single company in 1944 to 16 integrated companies today. Key factor in this steady progress is Barium's excep-

tionally broad base, clearly evident in the listing of its affiliates at right. This unique diversification — ranging from aircraft to steel — enables Barium to take on the toughest manufacturing and fabricating jobs and deliver the goods when, where and how you want them.

Take it from companies like Long Island Lighting — it pays to deal with Barium. If you'd like to know more about us and what our family of companies are doing, write today for a copy of *The Barium Story*. Barium Steel Corporation, 25 Broad Street, New York 4, N.Y.



#### Steel Producers

Chester Blast Furnace (pig iron) • Central Iron and Steel Company • Phoenix Iron & Steel Co.

#### Steel Fabricators & Processors

Phoenix Bridge Co. • Industrial Forge & Steel, Inc. • Globe Forge, Incorporated • Geometric Stamping Co.

#### Manufacturers of End Products

Clyde Iron Works, Inc. • Erie Bolt and Nut Company • Bayonne Bolt Corp. • Cuyahoga Spring Company • Jacobs Aircraft Engine Co. • Kermath Manufacturing Company • Kermath Limited (Canada) • Wiley Manufacturing Co.

#### Lightweight Metal and Plastics

East Coast Aeronautics, Inc.

# PEARLITIC MALLEABLE CASTINGS

when  
operating  
conditions . . .



... are  
severe

If service conditions are unusually rugged and you're troubled by high manufacturing costs—look to pearlitic malleable castings!

Pearlitic malleable has high fluidity that casts easily into complicated shapes. It resists wear under heavy loads at high speeds . . . has high ultimate strength . . . possesses excellent non-seizing properties for bearing surfaces . . . can be given a very smooth finish where desired . . . and can be either liquid quenched

or air quenched. And perhaps *most important of all*, pearlitic malleable machinability index ranges from 80 to 90 (B1112 steel = 100).

So look your product over critically. Then check pearlitic malleable castings. They can replace more expensive methods of fabrication or manufacture . . . can lead to reduced weight, less machining time . . . fewer assembly operations . . . *greater sales appeal for your product.*

AA-106

## NATIONAL MALLEABLE AND STEEL CASTINGS



**COMPANY**  
Cleveland 6, Ohio

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## PERSONNEL

Sheffield Corp., Dayton, Ohio, has named the following managers: **Victor Boll**, contract services; **Jack Welsh**, machine tool, murchey and cavitron; **William I. Wilt**, standard production; **W. Fay Aller**, research, and **Benton D. Wittemeyer**, fixed gages and inspection room instruments.

**Julius C. Hydrick**, named works manager, Quaker Rubber Corp. Div. of H. K. Porter Co., Inc.

**M. E. Fagan, Jr.**, has been appointed manager of the ordnance dept. of Westinghouse Electric Corp.'s Transformer Div.

**Enamelstrip Corp.**, Allentown, Pa., has named **Ira W. Fine** area manager, Philadelphia.

**Dr. A. Eugene Schubert** has been named manager, engineering, General Electric Chemical Materials Dept.

**Allan L. Burton**, appointed research director, Veeder-Root, Inc.

**Hamilton Goff**, appointed assistant to sales vice-president, U. S. Steel Homes, Inc.

**Donald L. Archibald**, recently appointed district sales manager, Joy Manufacturing Co.

**Arthur H. Sisson**, named manager of advance engineering, General Electric's small turbine and supercharger dept.

## OBITUARIES

**William A. Roberts**, 57, president, Allis-Chalmers Mfg. Co., recently after a short illness.

**K. C. Gardner**, 78, United Engineering and Foundry Co., chairman of the board and chief executive officer.

**Charles E. Pfischner, Sr.**, 52, president, E. T. Lippert Saw Co., Millvale, Pa.

**Walter P. Kimmel**, 53, district sales manager, The Oilgear Co., Milwaukee, Wis.





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 STEEL CORPORATION — Pittsburgh

April 28, 1955

Jones & Laughlin Steel Corp., Dept. 403  
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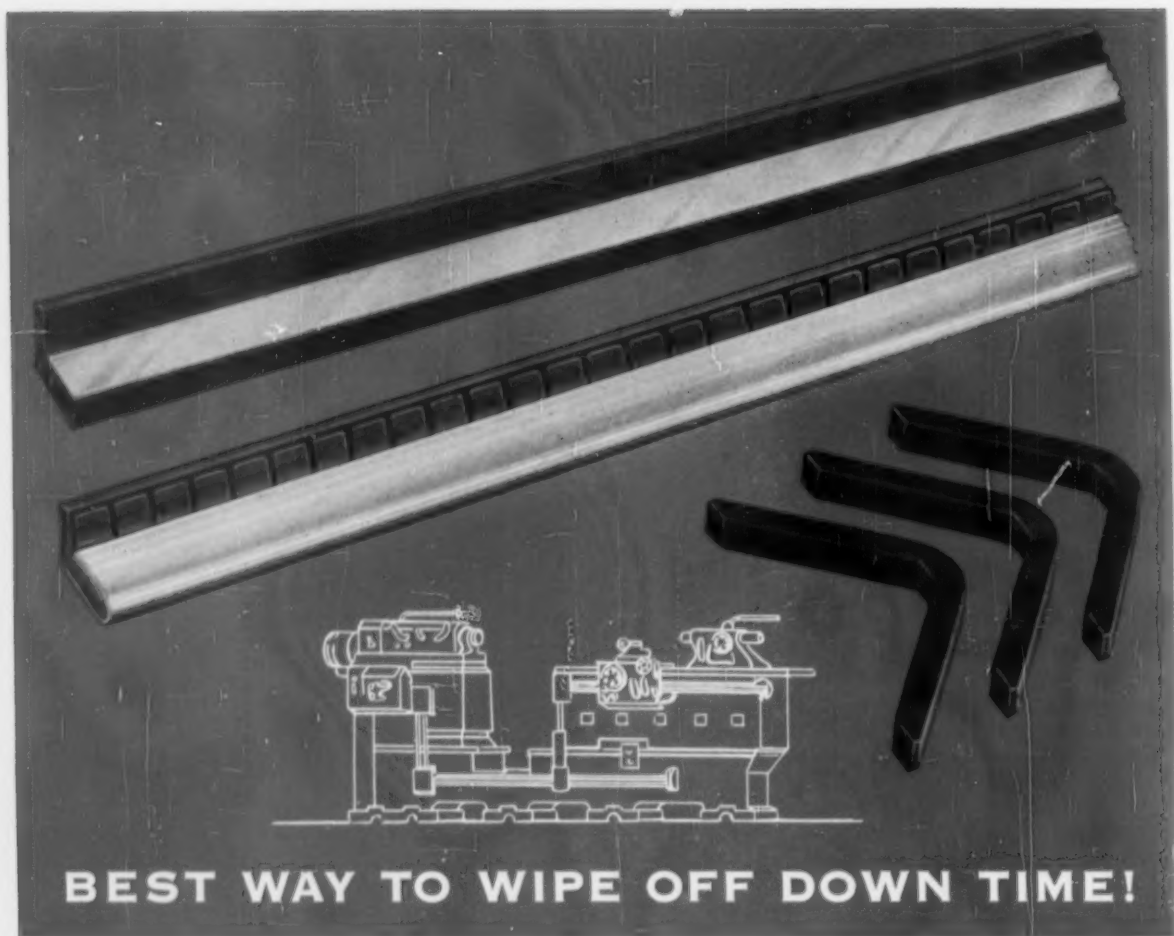
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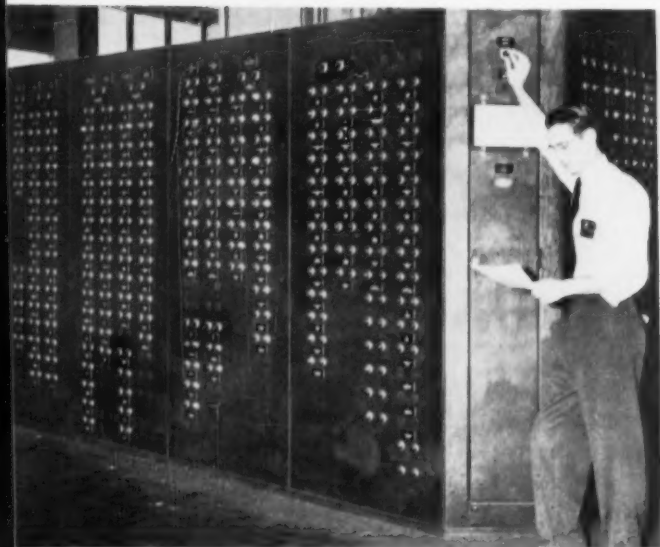
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CONTROL panel instantly signals any failure in driving motors or valving mechanisms of the 17 production heat treating furnaces. Panel is centrally located and its layout conforms to actual furnace positions in a plant layout view. Signal alerts technician if any furnace does not operate properly.

**To reduce downtime—**



## Heat Treatments Standardize Part Structures for Automated Machining Lines

By W. J. BEHRENS, Chief Metallurgist, Marion Div., Dana Corp., Marion, Ohio

♦ Automated or semi-mechanized metalworking plants require "something extra" in metallurgical control . . . Automated lines can't reject out-of-standard metallurgical conditions.

♦ Dana Corp.'s Marion Div. heat treats all incoming materials to establish uniform structures for its high-speed machining operations . . . Many other tests are applied as work progresses.

♦ OPERATION OF THE metallurgical department in a plant either wholly or substantially mechanized may pose a considerable number of problems not normally encountered in facilities where more conventional production methods prevail.

The Marion Div. of Dana Corp. employs a high degree of mechanization in its production of automotive universal joints and propeller shaft components and assemblies. Claimed to be one of the most modern plants of its type, it went into production in the spring of 1952.

**"Heat treatments were set up on the basis of chemistry and pilot forging runs . . ."**

Operating experience has been that material quality requirements in a plant of this type are far more stringent than they would be in one where a lesser degree of automation existed. Many metallurgical factors must be kept within quite narrow ranges in order to maintain the desired surface and sub-surface quality standards. Dimensional requirements are also more critical in that parts must come within close tolerances from start to finish.

The Marion plant operates on the basis of straight-line, high-speed production, with relatively long runs. This means that processing lines cannot successfully work around unusual metallurgical conditions; uniformity is a prime requisite. Any deviations from an established norm must be absorbed in heat treatment procedures.

**Suppliers must know end use**

Steel suppliers for this plant must know the exact end use of the material. Metal requirements are primarily related to optimum machining and processing operations because production lines are operated at the highest possible speeds and feeds. Shutting down a machine, or a series of machines, to meet changing conditions in metals can throw an entire plantwide production cycle completely out of kilter.

When the Marion Div. first went into production it was decided to heat treat all materials to gain the necessary advantage of uniformly controlled structures on the machining lines.

Heat treating procedures were established on the basis of chemistry and pilot forging runs. Hardening temperatures, quench media temperatures, quench header pressures, tempering temperatures, and all cycles throughout are set up to attain the desired physical properties related to optimum machining structures. Metallography is used to substantiate heat treating setups, and as a guide toward improved methods.

On receipt, forgings are first examined for chemistry. Where a new vendor is not acquainted with the firm's heat treating methods, pilot heat treating tests check hardenability response and normality of the steel.

Proper heat treatment, based on this pilot analysis, is then set up to give optimum machining structure. Structures are held within such limits that the production line is not



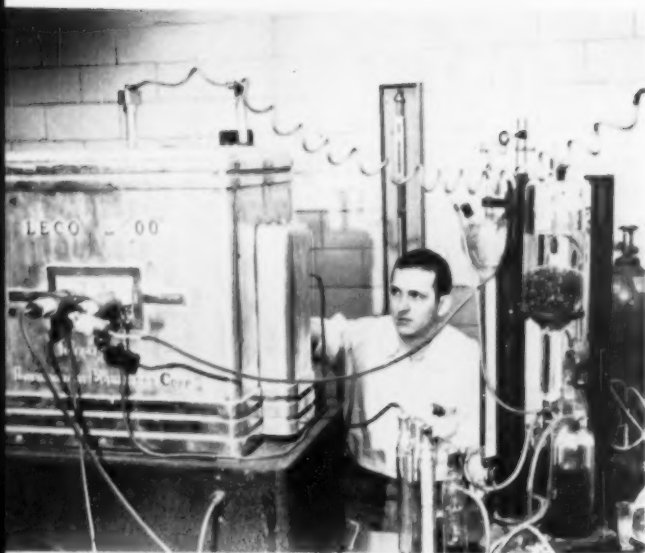
**FORGINGS** are continuously fed into the hopper of this completely mechanized heat treating furnace. After treatment, which includes a final shot blasting, the forgings emerge from the furnace at a common dispersal point.

aware of any differences in materials received from various vendors.

Metallography is further employed when, as a result of machining trouble, it becomes necessary to determine whether inherent imperfections in the parts as received were missed during routine preliminary examinations. The plant acquaints the vendor with the situation found to exist, and draws on his help in correcting the difficulty through the cooperation of his own metallurgist.

Additional physical testing equipment is used as parts progress along the lines. These tests determine whether components are within print specifications, and whether assemblies meet or exceed required physical values. For maxi-





**EQUIPMENT** for running any metallurgical test or analysis is essential to efficient operation in a mechanized plant geared to high-volume production. This laboratory combustion furnace tests for carbon and sulphur content.

mum quality control it is also imperative that the subsurfaces of component parts be examined critically.

As forgings are received they are initially heat treated in a hardening and drawing operation. This removed any heterogeneity inherent in the forging process and establishes the best possible machining structure.

Where subsequent heat treatment is to be performed, such as carburizing or induction hardening, certain parts received in the as-forged state are given an isothermal annealing treatment for better response to certain rough and finish machining operations.

#### **Carburize bearing surfaces**

Subsequent heat treatments, on universal joint journal crosses for example, involve a series of surface conditionings through heating and cooling, or quenching. This gives the parts a hard, good-wearing surface suitable for riding against the needle bearings in the assembly.

Bearing races, the other components in the needle bearing assembly, are made of strip stock and formed through various blanking, drawing, tempering, and coining operations. They are again carburized to harden the retaining surfaces for the needles supporting the journal cross. These high-hardened surfaces with their tough cores yield long service life.

For induction heat treatment of stub and yoke shafts, steels are used that respond readily to surface hardening. The parts are further tempered to achieve toughness under the hard

shell that serves as a part's sliding surface.

In heat treating coil stock after it has been formed into bar length tubing, the purpose is to augment and accelerate the normal strain-aging process in the cold worked stock. This ensures, upon release of the assembly, that the torsional requirements will be readily met.

Hopper-fed furnaces in the Marion Div.'s heat treating department are wholly mechanical. Materials are conveyORIZED all the way to a common separation or dispersal center located just beyond the shot blasting stage.

On carburizing lines the plant attempts to avoid having to load each cycle. The aim here is to replace a man as a manual operator, using him instead to load parts into the hopper on a 40-minute schedule. This provides much more flexibility.

A control panel designed by the plant's own engineers instantly signals any failure in critical driving motors or valving mechanisms on the production heat treating furnaces. There are 17 of these furnaces in the plant.

The "L" shaped control panel is centrally located, and its layout conforms to the position of furnaces in plan layout view. A series of electric bell signals alert the laboratory technician on duty to any furnace or furnaces having operational difficulties. By referring to the panel, the technician determines exactly where the difficulty lies and takes immediate steps to correct it. Close liaison with the plant engineer is essential since the latter supplies electricians and millwrights to make adjustments.

#### **Record instrument readings**

In cases where the technician can quickly re-establish furnace operation (for instance when parts become temporarily jammed) he will do so. He is not, however, permitted to attempt repairs involving the handling of wires or the use of wrenches.

Benefits from the panel installation include extremely close quality control due to early detection of furnace irregularities. Therefore scrap and rework may be held to a bare minimum.

Pyrometric controls are housed in an air conditioned room centrally located in the plant for ease of operation. This has minimized the maintenance problem so that instruments give an excellent degree of trouble-free service. Laboratory technicians handle routine maintenance and record regular chart readings as well as all irregularities.

A general log is also maintained to record instrument readings, sampling results, etc., on a continuing basis. By this means the production system is never more than 2 hours out of control.

The plant is equipped with the best of laboratory equipment and can readily run any test or analysis essential to efficient operation.

# Chip Crusher-Extractor System Recovers Oil, Speeds Handling

By W. D. LATIANO, Metallurgical Editor

♦ **CHIP DISPOSAL** can be costly if not handled properly. On the other hand, losses can be turned to savings with an efficient chip disposal system. Moreover, the number of man-hours needed for chip handling can be cut sharply, housekeeping becomes less of a problem and substantial amounts of cutting oil can be saved through recovery. These benefits are particularly important when a plant uses as many as 140 multiple-spindle automatics.

The New Departure Roller Bearing Div., General Motors Corp., Meriden, Conn., had just such a problem—until it installed a new chip disposal-extractor unit. Most of the previous difficulties have now been overcome and cut-

ting oil recovery alone amounts to about 1200 gal per week.

The system, made by Turbine Equipment Co., New York, can handle 12,000 lb of chips per hour. Only one man is needed to feed the system. It works on an automatic preset cycle, and once the cycle is established, the chips are fed into the system at a uniform rate.

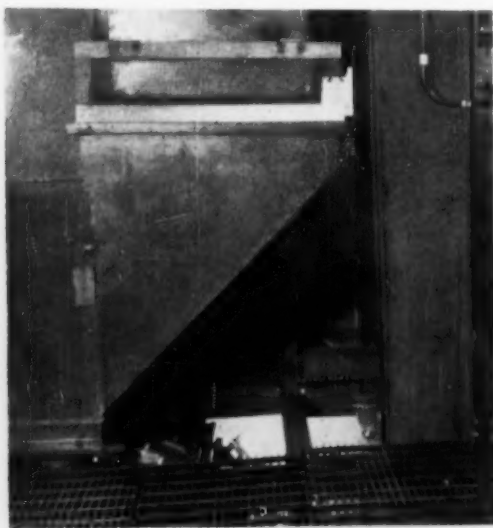
Principal units in the system include an American Pulverizer rotating crusher driven by a 50-hp motor, a Teco centrifugal oil extractor driven by a 15-hp motor and a Teco pneumatic chip conveyor and blower operated by a 30-hp motor. An elevated 2000 cu ft storage bin also part of the system, holds 6 days' chips.

♦ **Completely automatic**, a new chip disposal system takes chips through a turbine-type crusher, extracts the oil, then speeds the dry chips by air tube to a holding bin several hundred feet distant.

♦ **The system handles 12,000 lb per hour . . . Savings in cutting oil alone amount to 1200 gal per week . . . Less manual handling and better housekeeping are among other benefits.**



**OILY CHIPS** ride conveyor to crusher bin. Panel at right controls the entire system.



**HOPPER** feeds crusher (under grating). Pieces which cannot be crushed are rejected.



**CENTRIFUGAL** extractor fed by screw conveyor (arrow) recovers 1200 gal of oil per week.

The multiple-spindle automatics are located on the second floor of the plant. The chips generated are gathered in collecting pans and brought to the hopper chute where they are emptied. Chips drop into a 20 x 20-ft gathering bin below. An operator rakes the chips from the bin onto a flight conveyor at a constant rate. At the same time, he removes stray parts which may have fallen into the chip pans.

Chips from the conveyor drop into a hopper which feeds the crusher. Some stray parts enter the crusher and are crushed with the chips. Other stray parts, such as bar ends, cannot be crushed and are automatically rejected to a

bin above the crusher. Crushed chips drop from the bottom of the crusher and are conveyed to a holding bin by means of a vertical conveyor. The still oily chips are transferred from the bin to the oil extractor by a screw conveyor.

The extractor is of the batch type and operates on a timed cycle. When the screw begins feeding chips, the extractor begins to rotate slowly. Its speed increases steadily, and when the extractor attains top speed the screw conveyor stops feeding and the extractor continues to spin for the remainder of the cycle. When the extractor stops, it dumps load into a dry chip holding bin. This cycle is repeated.

From the holding bin, chips move by screw conveyor into an air lock which is connected with the pneumatic dry chip conveyor. This conveyor blows the chips through a 5-in. OD steel tube from basement level to a height of about 20 ft, then to a holding bin about 300 ft from the building.

Chutes in the holding bin simplify loading of gondola freight cars by gravity feed.

The bin has more than ample capacity for a carload of chips. This allows for spotting a car before the chip collector is overloaded.

The entire chip disposal-extractor system is operated and timed from a central control panel. The panel includes an overload warning system for the crusher. No difficulties have been encountered from freezing weather.

Recovered oil is pumped to a settling tank on the second floor. When a certain tank level is reached, the semi-clean oil is pumped to a Delaval separator where it is conditioned, then recirculated through the cutting oil system.

**AIR CONVEYOR** carries dry chips to holding bin 300 ft away where they are loaded in cars.



# Air Pollution: Furnace Types and Sizes Dictate Most Effective Controls

## Part I

♦ Keeping metal furnace dust and fume out of the atmosphere is a major problem in many industrial communities . . . Choice of effective control equipment depends on the type of furnace and nature of dust and fume generated.

♦ This comprehensive three-part series tells how Los Angeles County mills and foundries removed themselves from the "smog suspect" list . . . The authors explain the regulations, methods, equipment and costs required for air pollution control.

By N. R. SHAFFER, Engineer,  
and M. A. BROWER, Technical Assistant  
Air Pollution Control District, Los Angeles County, Calif.

**TABLE I**  
**Losses from Uncontrolled**  
**Furnace Sources**

Furnace Type and Capacity	Losses, lb per ton
Electric, under 5 tons	10.58
Electric, 5 to 20 tons	5.73
Electric, 50 to 75 tons	9.56
Open hearth, 60 tons in 8¼ hr	17.80

**TABLE II**  
**Average Equipment Efficiency**

Equipment Type	Efficiency, pct
Baghouses	99.0
Electrical precipitators	
On electric furnaces	97.5
On open hearths	96.5
Water scrubbers	61.9

**Distribution of Furnace Control Equipment**  
**In Los Angeles County**

Furnace Type and Capacity	No. of Furnaces	Steel Output, Tons per Day	Type of Control
Electric, under 5 tons	10	5.74	None
	7	37.10	Water scrubbers
	8	31.40	Baghouses
Electric, 5 to 20 tons	2	60.40	Water scrubbers
	7	261.30	Baghouses
Electric, 50 to 75 tons	3	1160.00	Electrical precipitators
Open hearth, 60 tons in 8¼ hr.	4	592.00	Electrical precipitators

**TABLE III**



♦ **THE STEEL INDUSTRY** in Los Angeles County is an expanding one. Fifteen steel producers, operating 41 furnaces, melt a total of 2,148 tons of steel each day. Yet, only one-half ton of particulate matter is emitted into the air daily by the entire industry!

Without air pollution controls, the 37 electric steel and four openhearth furnaces would emit a total of 12 tons of pollution into the atmosphere daily, see Table I. Electrical precipitators, baghouses and water scrubbers, however, are collecting a total of 11.5 tons of fumes each day, see Table II.

Of the 41 furnaces in operation, all but 10 have control equipment. This equipment was engineered and installed by the steel industry at a total cost estimated at more than \$1½ million to comply with the Rules and Regulations of the Los Angeles County Air Pollution Control District. The 10 furnaces not controlled are of the 50 to 500-lb capacity class with no appreciable loss to the atmosphere.

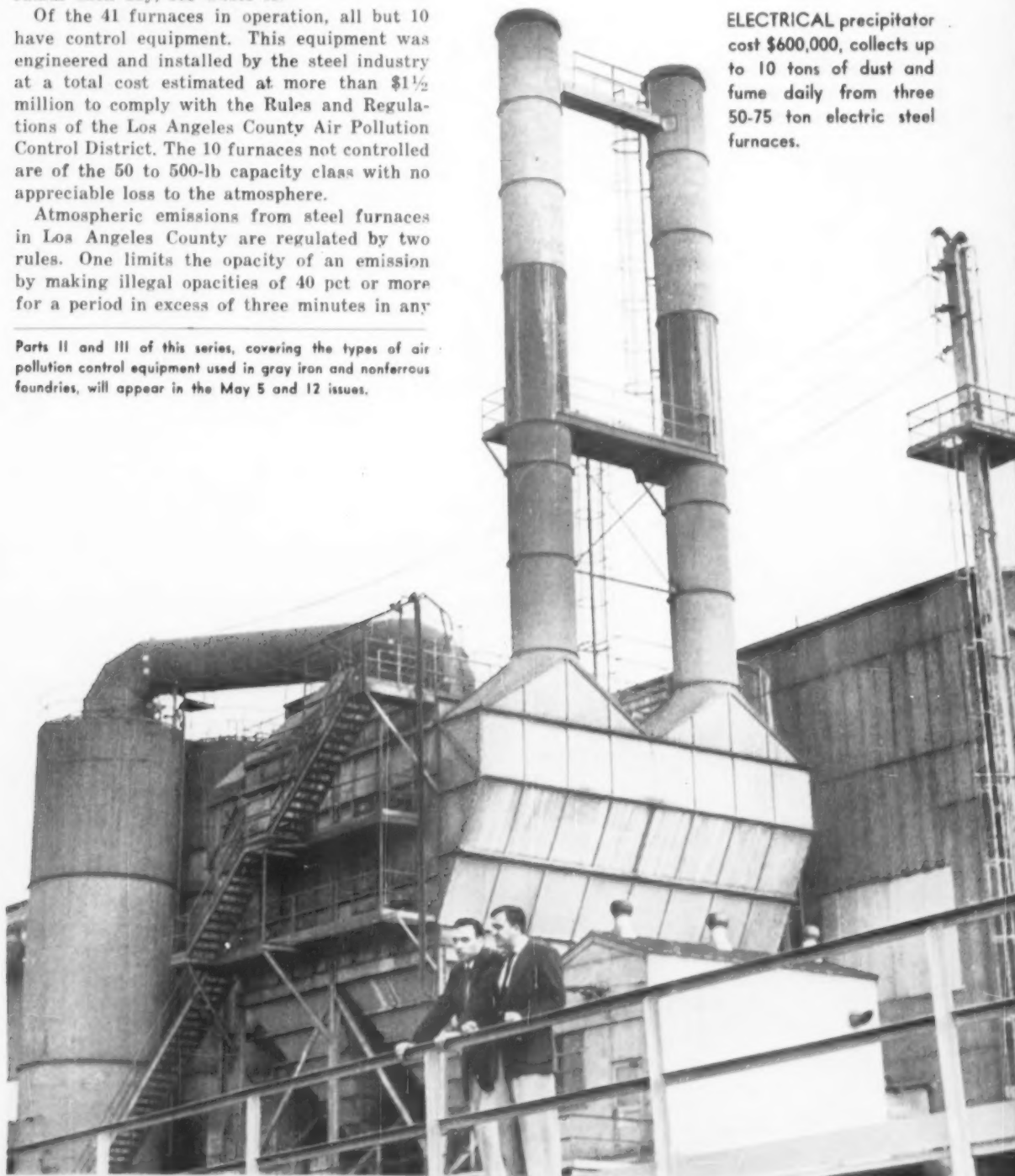
Atmospheric emissions from steel furnaces in Los Angeles County are regulated by two rules. One limits the opacity of an emission by making illegal opacities of 40 pct or more for a period in excess of three minutes in any

one hour. The second, Rule 54, regulates emissions by pounds per hour depending on the weight of material charged. Allowable emissions are on a sliding scale with 40 lb per hour as an absolute maximum.

For collection of these emissions, the baghouse proved to be most efficient in the overall picture with an efficiency of 99 pct. Electrical precipitators showed an efficiency of 97.5 pct on electric furnaces and 96.5 pct on openhearth

**ELECTRICAL** precipitator cost \$600,000, collects up to 10 tons of dust and fume daily from three 50-75 ton electric steel furnaces.

Parts II and III of this series, covering the types of air pollution control equipment used in gray iron and nonferrous foundries, will appear in the May 5 and 12 issues.



furnaces. An average efficiency of 61.9 pct was found for the water scrubbers.

Of the 25 furnaces with less than five tons capacity each, seven are controlled with water scrubbers and eight with baghouses. The 10 smallest furnaces are operated without controls but meet District regulations.

There are nine furnaces with capacities of five to 20 tons. Two of these are controlled with water scrubbers while seven have baghouse installations.

The three electric furnaces in the 50 to 75-ton class are controlled with an electrical precipitator while four openhearth furnaces each have an electrical precipitator, see Table III.

One firm in the Vernon area first attempted control of its four electric furnaces with two water scrubbers in series. This control installation, however, failed to pass Rule 54. The scrubbers were then replaced with a \$45,000 bag filter installation. While Rule 54 allows this firm a total of 22.03 lb per hour of discharge from the four furnaces, actual discharge to the atmosphere after the baghouse filtration is only 9.5 lb per hour. There is no visible emission whatsoever.

This same steel foundry has one one-ton furnace, one two-ton furnace and two six-ton furnaces. All are hooded for minimum escape at the furnace and the fumes are drawn to the baghouse by three fans in parallel with a total capacity of 63,000 cfm.

The baghouse has four sections and a total of 1536 orlon bags giving a total filter area of 26,174 sq ft. Each bag is 13 ft in length. The bags are shaken automatically with the dust falling into hoppers and then emptied into dump trucks by a screw conveyor.

Burned out bags, a problem which has plagued some firms, has been overcome at this foundry by use of orlon bags which are capable of withstanding temperatures up to 275°F. An automatic damper control system, activated by a temperature bulb, bleeds air into the duct just before the baghouse to control the gas temperature. Usual temperature of gases entering the baghouse is thereby only 100°F.

A Torrance area steel mill chose electrical precipitation to control its four openhearth furnaces, the only ones now operating in the County. Each furnace was also equipped with a waste heat boiler. The total cost of the installation of control equipment on the four openhearth furnaces was \$600,000.

Allowable loss per furnace for this firm, according to Rule 54, is 15 lb per hour. Actual loss from each precipitator stack is approximately four lb per hour.

Each of the four precipitators is of the horizontal flow dry type. The 6550 cu ft of interior is divided into two sections. Each precipitator has two electrostatic fields nine ft long, giving a total field of 18 ft. There are 510 electrodes

per precipitator each 17½ ft long. Total collecting surface is 10,700 sq ft. Automatic rapping keeps the collecting surface clean.

The largest units in the District to be brought under control were one 50-ton and two 75-ton electric furnaces in use at a Vernon steel mill. The project took two years of technical research and another two of engineering development. Reduction of pollution sufficient to comply with the rules eventually cost this firm \$600,000 for one electrical precipitator.

First attempt at control was to install two water scrubbers on one of the electric furnaces. This did not bring emissions into compliance.

The company then installed a \$450,000 electrical precipitator which had proved efficient on openhearth furnaces in the County. Tests showed an efficiency of only 65 pct, which was not enough. A lack of moisture was blamed for the inefficient collection. This was blamed on the lack of combustion in an electric furnace.

Following additional research, another \$100,000 was expended for water spray towers to lower temperatures and increase the moisture content of the gases before entering the precipitator.

Still another problem arose when high variations in the temperature of the gases from the furnaces made efficient furnace hooding difficult. Alterations in hooding were engineered, and satisfactory dust and fumes control was finally achieved.

### **Precipitators have large capacity**

Electrical precipitators of the single-stage type used by the steel industry are high voltage devices in which each particle of pollution is given an electric charge and simultaneously collected on plates with an opposite charge. Voltage might be as high as 100,000 v. These precipitators have large volume capacities with high collection efficiencies over a wide particle size range. This type of air pollution equipment is high in initial cost but usually low in maintenance as compared to conventional baghouse installations.

The baghouse or cloth filter is used for high efficiency removal of particulate matter when an appreciable fraction of the emissions has a particle size smaller than 10 microns. A baghouse consists of cloth bags or stockings into which polluted air is blown. The entrained solids are then filtered through the build-up of dust on the cloth filter. Because of this action, efficiency depends to a large extent on the method and extent of shaking of the bags. Shaking must be often enough so as not to allow dust to build up to a point where filtering stops and yet not so often that the build-up is inefficient.

Filters have been developed which take temperatures up to 600°F for short periods. Excessive entrained moisture must be avoided.

# Auto Makers Use More Zinc Diecastings in Grilles

◆ USE OF ZINC diecastings in 62 pct of the 1955 passenger car grilles marks the first large-scale trend reversal in favor of zinc alloy since the years immediately preceding World War II.

Automobiles for 1955 show the greatest variety of grille designs in many years. Of 21 different designs, 13 use zinc diecastings. This significant increase apparently reflects industry confidence in the current stability of zinc supplies and prices.

The Chrysler Imperial and Buick grilles are heaviest in zinc content, containing 25 lb of zinc alloy apiece. Chrysler also uses 14.5 lb of diecast zinc in its Windsor and New Yorker grilles. This adds up to a major material switch for the Chrysler line which used no zinc in its 1954 cars. DeSoto, Chrysler Corp.'s big zinc user last year, continues the trend with a 1955 grille containing 15 lb of diecastings.

## Price and supply affect use

Studebaker-Packard Corp. is once again a large user of diecast zinc grilles with 22 lb in both the Packard Clipper and Studebaker models and 20 lb in the Packard Patrician. Kaiser-Willys also dressed up the 1955 Kaiser and Willys lines with grilles containing 21.4 and 19.8 lb of zinc alloy.

American Motors also joined the all diecast grille family with the 20-lb Nash, 19-lb Hudson and 9.5-lb Rambler assemblies. Chevrolet completes the industry list for 1955 by using 6 lb of zinc diecastings to form the grille frame.

Zinc alloy price and supply picture has much to do with this auto industry trend, but there are other reasons as well. The material is preferred for decorative trim primarily because of its high quality appearance when chrome plated and the ease with which it can be plated.

Other preference factors are high impact

strength, low die cost and ability to produce complex shapes to a high degree of dimensional accuracy without machining.

The 1955 Buick grille is a good example of intricate design satisfactorily accomplished with zinc diecastings. The mesh-type center section takes the bulk of the 25 lb total.

Chevrolet, on the other hand, achieves its grid effect with stampings, but uses zinc diecast upper, lower and end moldings to form the grille frame. The frame provides the necessary rigidity, strength and impact resistance for the complete assembly.

The seven sections or "spuds" between the parking lamps on the new DeSoto each weigh 1.5 lb and make up the bulk of the 15 lb of zinc diecastings in the grille. And Studebaker's interesting grille achieves unusual depth of section with a zinc diecasting. Nash's bold design step incorporates headlight assemblies as integral parts of the diecast grille.

1955 Grilles and Weight of Zinc Alloy Diecastings.



Has good wear resistance—

# SAP

## Retains Properties After High Temperature Exposure

♦ Ability of sintered aluminum powder to retain high mechanical properties after continued exposure to high temperature suggests many interesting applications for this relatively new material . . . It has already been tried in compressor blades, pistons and related piston parts.



By ROLAND IRMANN,  
Research Laboratory  
Société Anonyme pour l'Industrie de l'Aluminium  
Neuhausen am Rheinfall, Switzerland

♦ THE UNUSUAL properties of sintered aluminum powder (SAP) have awakened considerable interest. SAP has now been produced as bars and sections, forgings, sheets, tubes, and sinterpressed compacts. It has been applied in a number of places where resistance to elevated temperatures is important, including compressor blades, pistons and piston parts.

The strength of SAP is about the same as that of fully heat treated aluminum alloys. Temperature exposure to 550°C, however, has no influence on its tensile strength. This complete retention of properties after high temperature soaking is of utmost importance in the application of SAP.\*

The powder required for SAP must be extremely fine. It is produced by the Hametag process and has an oxide content of about 13 pct. Oxide content can be varied to meet special needs. The length and breadth of the particles is many times greater than their thickness.

The high mechanical properties of SAP at room temperature can be traced to the small particle size, through which a diminution in slip occurs. The oxide envelope of the particles hinders grain growth and recrystallization during heating. Binding of particles during ex-

trusion and sintering is facilitated by plasticity of the soft pure aluminum groundmass.

Because of this it is probable that the oxide envelope is broken through, allowing diffusion. The relatively high electrical conductivity and the diffusion characteristics of SAP seem to indicate the oxygen in SAP is not present as  $Al_2O_3$ , but as an oxide with excess aluminum.

If coarser pure aluminum powder is used, which because of its small surface area has a smaller oxide content, then the properties are lower, while with the finer powder, with higher oxide content, higher properties are obtained. With further increase of oxide content the possibility of diffusion is reduced and thereby the properties, after reaching a maximum, again fall off, only the hardness increasing further.

Wrought pure or alloy aluminums, when annealed, exhibit low properties. These properties, however, can be improved by cold working or heat treating. Subsequent heat treatment at from 300° to 400°C anneals the materials and nullifies the improvement gained by cold working or a prior heat treating.

\*Sintered aluminum powder is marketed in the British Commonwealth as Hinduminium 100.



Fig. 1 illustrates this. The ultimate strength of cold worked (hard) pure aluminum and of heat-treated standard aluminum alloys falls after heat treating at 400°C to the values given for the annealed materials. SAP shows the strength of a fully heat-treated alloy similar to 51S and heat treatment at temperatures to 550°C does not influence tensile strength.

An aluminum alloy with high elevated temperature strength is Y alloy, (Al-Cu-Ni-Mg). If extruded and fully heat treated Y alloy is soaked at temperatures up to 500°C for one year and tensile tested at room temperature and at the soaking temperature then, even at 200°C there is a marked decline in ultimate strength. SAP soaked at temperatures up to 600°C exhibits properties far greater than those of Y alloy. The ultimate strength of SAP at room temperature after heating at 500°C is 50,000 psi and that of Y alloy 21,000 psi. If testing is carried out at 500°C then SAP has

an ultimate strength of 14,300 psi and Y alloy a strength of less than 1400 psi.

### How properties compare

Creep resistance of SAP with about 13 pct oxide and Y alloy in the fully heat treated and annealed conditions have been tested at temperatures up to 400°C. Testing of the fully heat treated Y alloy was carried to 200 and 2000 hours. The annealed Y alloy was tested to 2000 hours. Since no recrystallization or softening occurs in SAP, testing was carried to 720 hours only. Limiting stress was taken as that causing no more than 0.2 pct permanent deformation. Results are shown in Fig. 2.

The creep strength of Y alloy after 200 hours at 300°C and 2000 hours at 250°C falls to the value of the annealed material. At 400°C the creep strength of Y alloy was 1430 psi while that of SAP was 10,700 psi.

Fig. 3 compares permanent deformation of

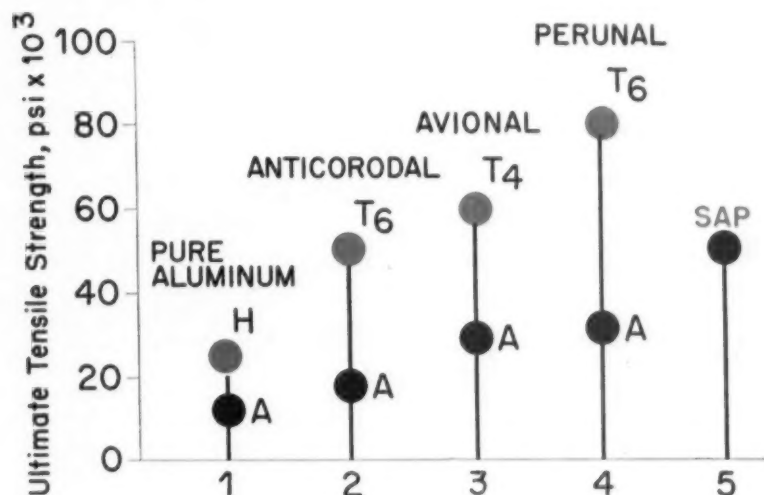


FIG. 1—Ultimate tensile strength of SAP and various aluminum alloys. Anticorodal, Avional and Perunal are similar to 51S, 17S, and 75S. Symbols: H, hard; A, annealed; T<sub>6</sub>, fully heat treated; T<sub>4</sub>, solution treated and naturally aged.

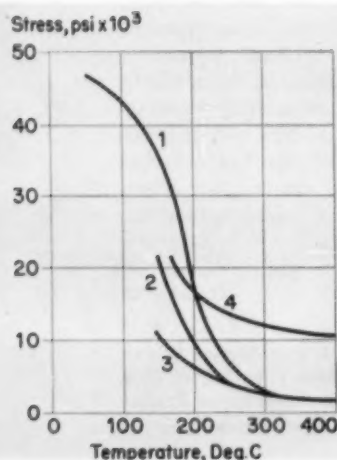


FIG. 2—Creep of SAP and Y alloy (0.5 pct permanent deformation): (1) Y alloy, fully heat treated, after 200 hours; (2) Y alloy, fully heat treated, after 2000 hours; (3) Y alloy, annealed, after 2000 hours; (4) SAP after 720 hours.

SAP and Y alloy up to 0.5 pct by heating them for 1000 hours at temperatures ranging from 250° to 500°C. At 300°C the creep stress of Y alloy is far below that of SAP at 500°C.

Fig. 4 compares stress-rupture of SAP,<sup>1</sup> pure titanium 75 A<sup>2</sup> and titanium alloy 150 A<sup>3</sup> up to 10,000 hours at 480°C. Above 135 hours the values of Ti 75 A fall below the SAP curve. Comparing specific densities, the SAP value curve will probably cross the Ti 150 A curve after about 35,000 hours.

Fatigue properties of SAP have been compared with those of extruded, fully heat treated Y alloy, at 20°C and 100 x 10<sup>6</sup> cycles, using polished test pieces. An alternating fatigue strength of 20,000 psi can be quoted and at 400°C the value is 2850 psi. For comparison the fatigue strength of SAP at 100 x 10<sup>6</sup> cycles

is shown in Table I. Repeated loading fatigue strength of SAP and fully heat-treated Y alloy, for  $2 \times 10^6$  cycles of stress is shown in Table II.

SAP possesses no specific melting point. Above about  $660^\circ\text{C}$ , the material becomes a tacky mass without appreciable change of shape. The interesting properties of SAP are lost by this treatment.

The specific weight of SAP, 2.8, is higher than pure aluminum due to the oxide content. Electrical and thermal conductivities are approximately proportional to oxide content.

A permanent thermal expansion or growth cannot be determined for SAP. The coefficient of thermal expansion is shown in Table III. The modulus of elasticity, Table IV, is dependent on the oxide content, i.e., the thickness of the layer of the particles. The influence of temperature on the modulus of elasticity of 13 pct oxide SAP is about the same as for pure aluminum, Table V. Corrosion tests in sea water and other media indicate SAP suffers no deterioration because of stress corrosion.

SAP is normally hot worked at temperatures

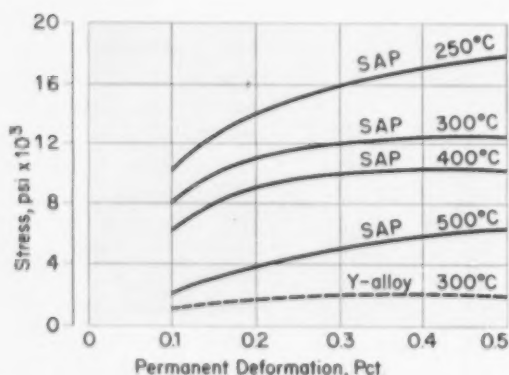


FIG. 3—Creep of SAP and Y alloy from  $250^\circ$  to  $500^\circ\text{C}$  up to 0.5 pct permanent deformation.

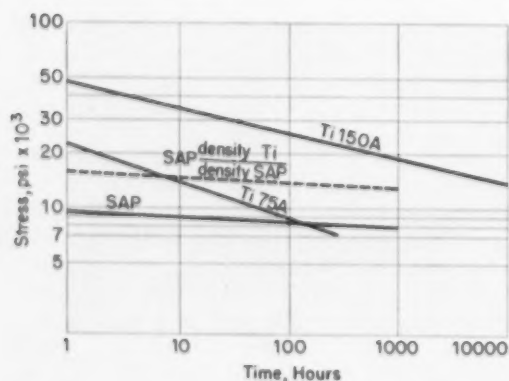


FIG. 4—Creep-rupture at  $480^\circ\text{C}$  of SAP, pure titanium 75 A, titanium alloy 150 A to 10,000 hours.

TABLE I

FATIGUE STRENGTH, ROTATING BEND

Test Temp, Deg C	Rotating Bending Fatigue Strength of SAP, psi
20	17,000
250	11,200
300	10,700
350	9,400
400	9,000

TABLE II

FATIGUE STRENGTH, REPEATED LOAD

Test Temp, Deg C	Repeated Loading Fatigue Strength, psi	
	SAP	Y Alloy
20	27,000	34,500
250	20,000	18,000
300	17,200	10,000
350	15,700	2,700

TABLE III

COEFFICIENT OF THERMAL EXPANSION

Temperature, Deg C	Coefficient $\frac{\text{cm}}{\text{cm} \times ^\circ\text{C}}$
20-100	$20 \times 10^{-6}$
20-200	21
20-300	21.5
20-400	22
20-500	22.5

TABLE IV

MODULUS OF ELASTICITY VS. OXIDE

Pct Oxide	Average Value of the Modulus of Elasticity, $\text{psi} \times 10^3$
0	8,800
5	9,200
10	9,700
15	10,200
20	11,000

TABLE V

MODULUS OF ELASTICITY VS. TEMPERATURE

Temp, Deg C	Average Value of the Modulus of Elasticity, $\text{psi} \times 10^3$
20	10,000
100	9,500
200	9,000
300	8,300
400	7,700
500	6,900

between  $500^\circ$  and  $600^\circ\text{C}$ . At these temperatures, the materials high temperature strength necessitates appreciably higher pressures. Forgings similar to those obtained from aluminum alloys can be obtained by hot working. Examples are compressor blades and pistons.

SAP inserts may be used for heat-affected zones, such as the piston crown, the crown and the piston ring zone or the ring zone alone. Inserts are cast-in or mechanically inserted.

#### REFERENCES

1. Aluminum Powder Products Compared, E. Gregory, N. J. Grant, Iron Age, Dec. 25, 1952.
2. Stress-Rupture Characteristics of Unalloyed Titanium Plotted, F. B. Cuff, Jr., N. J. Grant, Iron Age, Nov. 20, 1952.
3. Handbook on Titanium Metals, 7th edition, 1953, Titanium Metals Corp. of America.

Two at a time—

## Automatic Dial Setup Taps Plastic Moldings at High Speed

◆ PRODUCTION TAPPING of cored holes in phenolic plastic molded parts is not usually considered an easy job, partly because of the plastic's abrasive qualities. But an automatic dial setup at International Business Machines Corp.'s Endicott, N. Y., plant taps No. 3-48 threads in such moldings at the rate of 30 holes per minute.

The dial index table is applied to a two-spindle Cleveland tapper. Only manual labor required in the entire operation is to position two moldings in each dial fixture as it stops at the loading station.

### Use simple dial fixtures

The dial fixtures are very simple: Pins and tapered projections fit the under side of each molding to locate the piece and keep it from rotating when tapping is done. Moldings to be tapped are dumped into a hopper and slide down a chute near the loading station. From this point they are loaded two at a time by the machine operator.

There is one dual tapping station at the back of the machine. Before the moldings reach it, they pass a small, automatic, air-operated ram which seats each molding against the fixture.

At the tapping station, automatic action causes both taps to lower, cut their threads and retract. The moldings are then indexed ahead to an unloading station where they contact inclined surfaces that lift them off their fixture pins. Moldings drop off the fixtures and slide into a tote box.

Several types of steel taps were tried when this setup was first put into service. Their life varied and only 100 to 700 holes could be produced before they had to be reground or scrapped. Solid carbide taps were substituted and give excellent service, producing 20,000 to 30,000 threaded holes before regrinding.

Each tap is kept cool by a jet of air that flows constantly while the machine is in use. Tapping is done dry; all dust and chips are vacuumed off through an outlet at the tapping station to keep machine and air clean.

AFTER hand loading, moldings index clockwise for automatic clamping, tapping and unloading.



**Lower overall cost—**

# **Blast Cleaning Provides Better Surface for Varied Mill Products**

♦ Increasing difficulty in disposing of spent pickle acid plus the costly job of fume removal has directed considerable steel mill attention to blast cleaning . . . Better abrasives and equipment have helped the trend.

♦ Mills find abrasive blasting economical for cleaning carbon and alloy steels, including stainless . . . Techniques are applied to ingots and slabs as well as sheet, strip and bars.

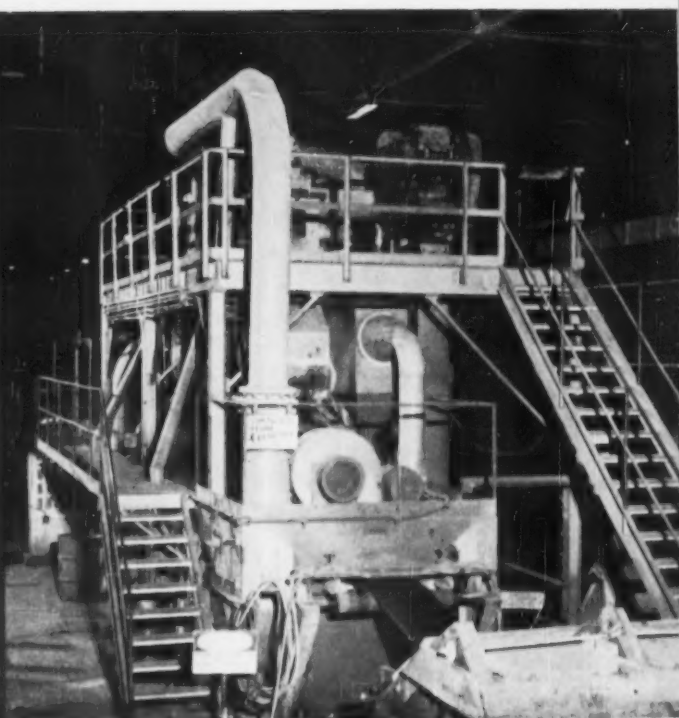
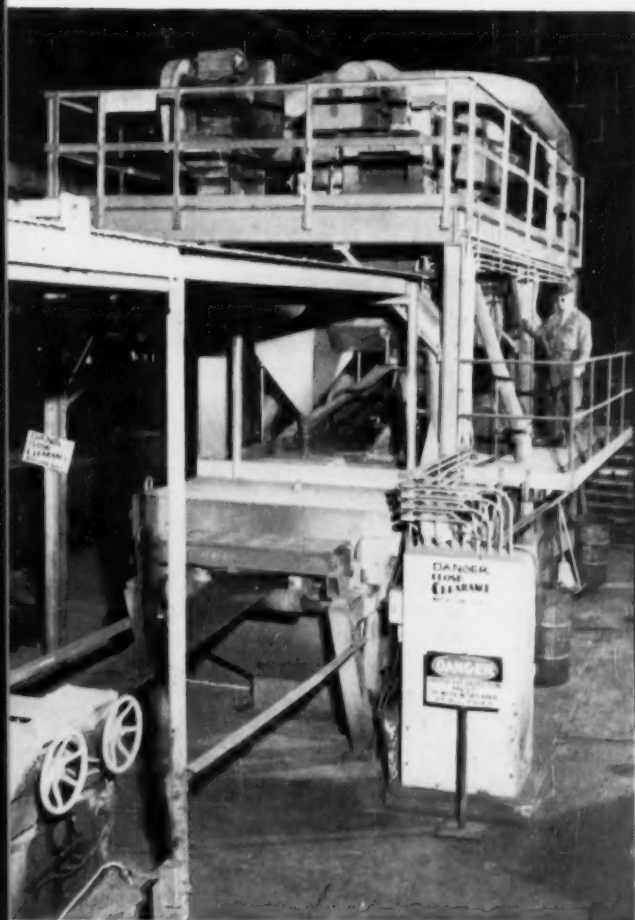
By W. G. PATTON, Asst. Technical Editor

This article was extracted from a paper written by J. H. Jones, Asst. District Manager, Central Alloy District, Republic Steel Corp., and presented before the Shot Peening Committee of SAE. The complete paper will be published at a later date by SAE.

OPERATOR applies abrasive blast manually to clean special stainless plates and sheets.







Left: STAINLESS strip entering 4-wide wheel unit to be blast cleaned with 0.017-in. steel shot. Overall blast cleaning costs have been lower than anticipated when unit was installed.

Above: EXIT end of stainless strip unit has pressure blowers to clean shot from emerging strip. Surface condition has been improved by the removal of slabs and slivers from the strip.

◆ **SURFACE PREPARATION** at Republic Steel Corp.'s Central Alloy District in Massillon and Canton, Ohio, ranges from polishing stainless steel to a mirror finish to skinning a 16,000 lb bloom at rolling temperature. Mechanical blast cleaning has made substantial contributions to surface preparation of mill products, and has eased the troublesome and costly problem of disposing of spent pickle acid and removing fumes from pickle buildings.

Republic has been using mechanical blast cleaning for a number of years. Years ago a prominent American steel plant producing heavy gage galvanized drainage sheets, encountered a serious condition known in the trade as "peeling." The decision was made to substitute mechanical blast cleaning for pickling.

Initially, the cost of blast cleaning was higher than pickling and the process could not be used for light gage material. Experience showed, however, that a more desirable surface for galvanizing was produced. The blast-cleaned surface has qualities for deep drawing,

cold forming and fabrication, and provides a uniformly etched surface for mechanical bonding such as galvanizing and painting.

The installation is now superior to pickling both from the standpoint of cost and quality of the product. The peeling problem has been virtually eliminated on heavy gage material through the use of blast cleaning.

Until some years ago, the only metallic abrasive on the market was a chilled iron product. Hardness of the material was about 65 Rockwell C. This shot fractured on impact and tended to imbed itself in the surface of the blasted material, resulting in high abrasive consumption and excessive destruction of blasting equipment. Using the best available wheel design and special alloy blades, replacement of blades was necessary after about 160 hr.

Since World War II heat treated iron abrasive has become available. This has lowered the high consumption rate and reduced the destructive action of the untreated iron pellet.

High carbon cast and cut steel shot are also

available. This material has eliminated or greatly reduced the imbedding tendency and has lowered costs through reduced consumption and less destructive action. The shot is accurately round and solid in all sizes and fully heat treated. This shot (about 45 Rc) gradually wears down instead of breaking down as did the old chilled iron shot. It can be used 5 to 7 times as long; life of critical wearing plates in blast cabinets has been increased from 40 to as much as 1500 hours.

Considerable research work has been done recently on blast cleaning the inside of steel ingot molds. Blast cleaning produces a closed surface, thereby reducing the tendency of ingots to stick to the mold wall.

Blast cleaning of single strand rods or wire from coils is now being done on a production basis in  $\frac{5}{8}$  in. to 1 $\frac{1}{4}$  in. diam. Narrow wheels are used to minimize blast waste. Wider wheels may be used to clean multiple strands.

Some years ago steel rolling mills tried both compressed air and centrifugal blasting for descaling billets. Some observers felt that blasting cleaned the billet so well that seams were more easily detected; others felt that blasting closed the seams, making inspection more difficult. It was also contended that hard cast iron shot imbedded in the billet surface. The latter objection has been a retarding factor in blast cleaning billets and slabs.

#### Find new uses

Together with progress in both abrasives and blasting equipment, new uses have been found by the steel industry for blast cleaning of billets and slabs. A 4-wide wheel machine is now in limited production on billets 15 in. x 15 in. and slabs 22 in. wide x 20 ft long. The scouring process, substituted for a direct vertical blast, seems to have overcome the imbedment problem. Cost of the operation is reported to be in favor of blast cleaning over other methods.

Other mechanical blast cleaning installations are performing special jobs such as cleaning stock for cold drawing; removing scale and oxidation from structural shapes so that paint adherence is improved; and etching rolling mill rolls to provide different finishes.

The purpose of blasting work roll faces is to impart a matted or "hill and valley" surface on the roll so that in finish rolling this matted surface is transferred to the surface.

There are other advantages of a matted finish of the sheet surface: (1) Improved grip in draw dies; (2) Better retention and distribution of drawing compounds; (3) Improved surface for coatings, including paint and enamel; (4) Reduced sticking in annealing furnace resulting from "hill and valley" contact between sheets and coils.

Roll blasting is a delicate operation, requiring duplication of established finish stand-

ards, colors and reflectivity. Angular cast iron shot is generally used, having a hardness of 60-64 RC. This grit penetrates the roll face but its inherent brittleness causes it to shatter into smaller sizes and constantly wear down as a result of repeated impact. Cleaning of the abrasive is accomplished by cascading the used material over a slope through which a controlled stream of air is passed to remove unsuitable sizes.

Roll blast machines are made for both compressed air nozzle operation and centrifugal blast wheels. When using compressed air nozzles, a separate pressure blast tank must be provided for each size.

At least 20 different steel companies are now using mechanical blast cleaning. Five of these companies are also cleaning alloy and some stainless by the same method. Several firms are installing completely new mechanical descaling lines to reduce or eventually eliminate acid pickling. With the exception that only a light acid rinse is used and strip is scrubbed with water at high pressure, the new cleaning lines are similar to a conventional pickle line.

Blast cleaning is also applied to carbon skelp which is formed into pipe or tubes. Both air and mechanical means are used to "blast clean" this skelp.

At one location, skelp from 73 to 92 in. wide is cleaned on the edges by four air blast units. Each air gun cleans a band 3 in. wide.

Republic removes surface defects from stainless sheet by blasting G-80 angular metallic grit against the surface with hand operated air blast equipment. A total of 8 blasting cabinets, operating independently, is used. Air pressure supplied to each of the cabinets is 120 psi. Defects not removed by blasting are hand ground. Average shot consumption is 24 lb. of grit per 1,000 sq ft of area cleaned.

Republic also uses blast cleaning to prepare stainless bar stock for cold drawing. The cleaning unit can accommodate bars from 1 $\frac{1}{4}$  in. to 6 in. diam.

Titanium hot rolled strip and semi-finished cold rolled annealed strip have been cleaned for cold reducing in a shot blast unit using 0.017 in. shot. Mechanical cleaning of titanium appears to be quite desirable.

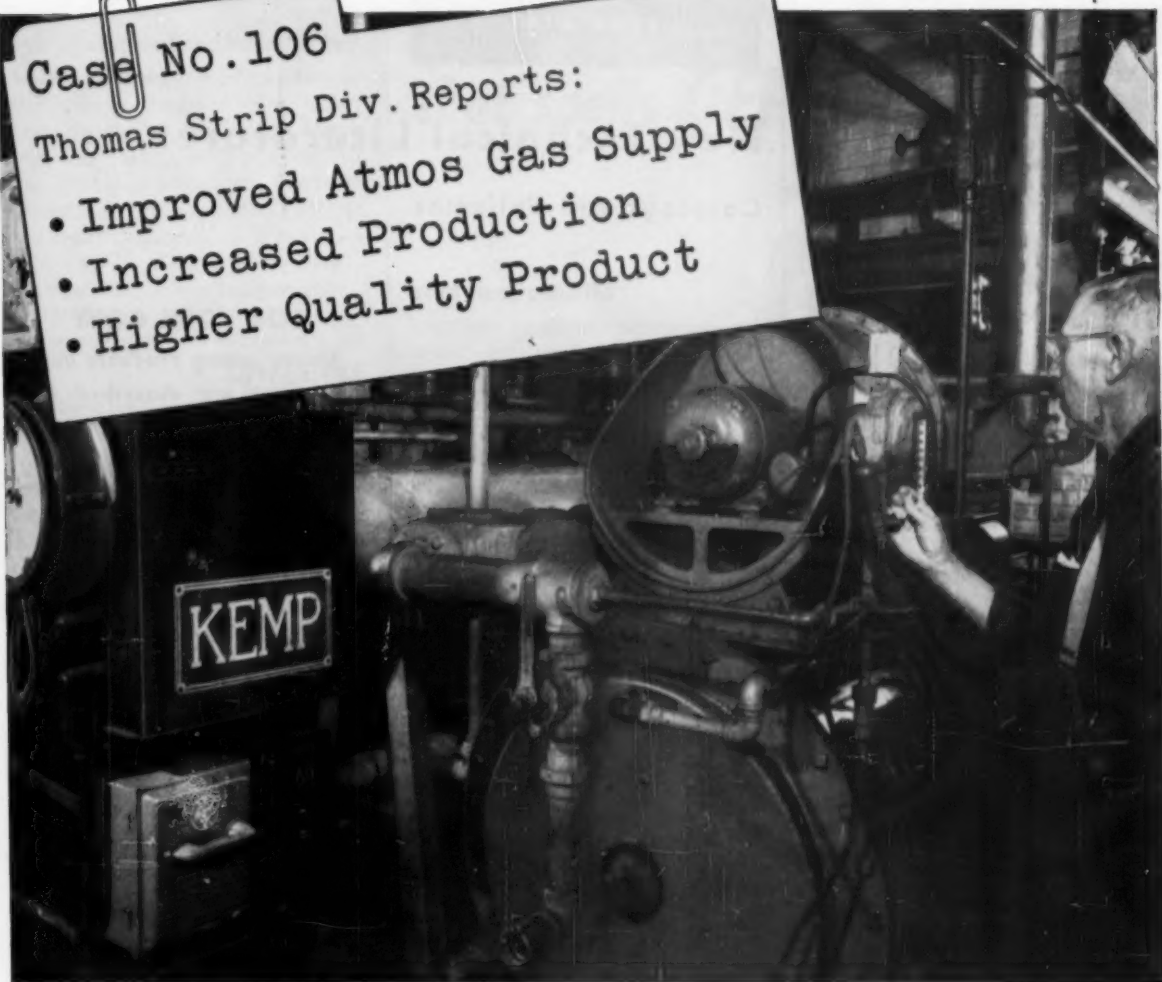
A blast unit was installed by Republic 3 years ago for cleaning stainless strip. The unit was set in a conventional normalize and pickle line. Furnaces and tubs are designed so strip can be bypassed over them if desired.

Generally speaking, overall blast cleaning cost has been lower than was anticipated. Improvement of surface condition has been accomplished by removal of scabs and slivers. Dust from blast cleaning can be remelted and returned in ingot form in contrast to disposal of spent pickle liquor which is a difficult problem.

Case No. 106

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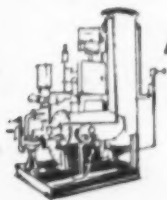
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##### Low alloy steels

A 48-page booklet illustrates the wide application of nickel-copper high strength low alloy steels in transportation, bridge construction, mining, agriculture, marine equipment and other fields. Working methods, mechanical properties, compositions and availability of seven steels of this class are given. Numerous tables and charts and more than 100 illustrations are included in this interesting booklet. *The International Nickel Co., Inc.*

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##### Automatic shell molding

A fully integrated, automatic shell molding system capable of producing up to 240 quality molds per hour is described in a new book. The system is flexible enough to be tailored to the requirements of a particular foundry. Specification data is given on sand-resin handling, the heating equipment and the automatic controls. With this new system workers can produce castings of thin section or intricate design with a higher yield of clean, sound castings per man. *Link-Belt Co.*

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scribed in a bulletin. Users have experienced cost savings with this high carbon, heat treated steel shot designed exclusively for shot blasting operations. *American Wheelabrator & Equipment Corp.*

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##### Precision lathe

The new Sheldon-built Sebastian geared 15 in. head lathe, now in production, is described in a 4-page circular. Complete specifications, including capacities, design features and accuracy tests are included. Printed in color, this circular contains close-up views of the many important design features of this new geared head lathe. Accessories are listed. *Sheldon Machine Co., Inc.*

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##### Complete line bulletin

A 6-page complete line bulletin that can be read in six minutes illustrates and describes the basic Kling models that represent over 50 different machines, and which handle more than a score of metal fabricating operations. Included are data on high speed friction saws; combination shear, punch and coper; vertical, horizontal and universal type punches; angle and plate bending rolls; double angle, rotary and guillotine shears; combined punch and beam benders and bulldozers. *Kling Brothers Engineering Works.*

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## FREE TECHNICAL LITERATURE

### Spectrophotometer

A new infrared recording spectrophotometer, designed for either quantitative or qualitative analysis, has just been introduced by the manufacturers of precision apparatus for chemical analysis and quality control. It is equipped with a series of controls which permit flexibility in spectrum analyses.

*Baird Associates, Inc.*

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### Lytron 886

Development of a chemical flocculant to remove suspended solids from foundry wash waters has been announced by Monsanto. The material, Lytron 886, is effective in concentrations of as little as two parts per million. The Monsanto flocculating agent offers an additional benefit to foundries in regions where water supply is limited, for clarified water can be recycled to minimize the requirements for make-up water. A 16-page booklet describes the material and the techniques recommended for its use.

*Monsanto Chemical Co.*  
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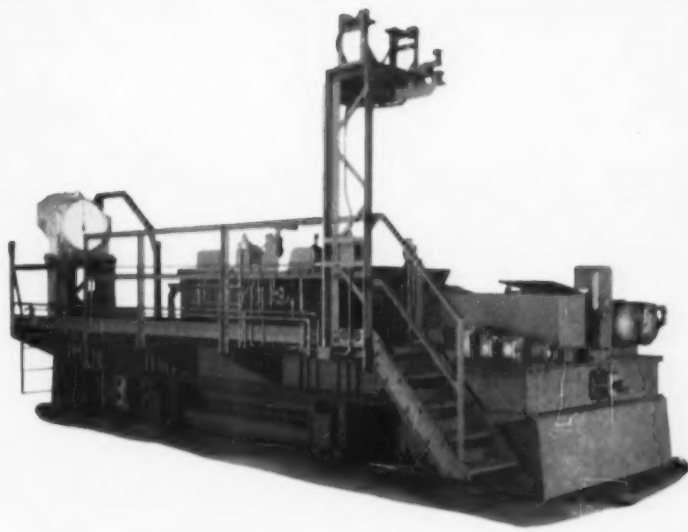
### Amplifier

A versatile amplifier which can be used in telemetering, control systems, preamplification, automation uses, stress measurement, temperature measurements and temperature difference, is described in a catalog. Topics covered include: outstanding features, construction features, automation applications, and performance specifications. This new amplifier is an electronic low-voltage linear amplifier designed to increase the speed and accuracy of practically all low level dc voltage measurements.

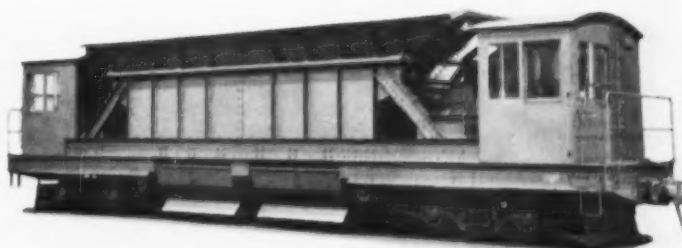
*Hagan Corp.*

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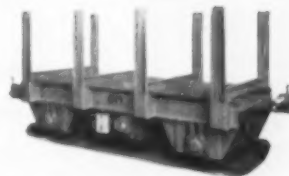


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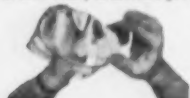


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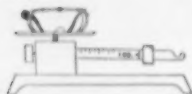
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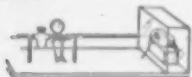
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**Fuller feeders**

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A 26-page bulletin describes the complete line of liquid level gauges for indicating, recording, controlling, and telemetering. The bulletin shows float-type, pressure-type, differential pressure - type, and bubbler-type liquid and water level gauges, in strip and round-chart models. Air or electric controllers are available. Engineering data and installation information is included. *The Bristol Co.*

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**Temperature controls**

A bulletin describes the application of Honeywell temperature controls, limit controls, valves and Protecto-glo combustion safeguard systems to Maxon Premix industrial gas burners and burner systems. Schematic system diagrams and selection of tables are included, along with application information for various types of industrial heating. *Industrial Div., Minneapolis-Honeywell Regulator Co.*

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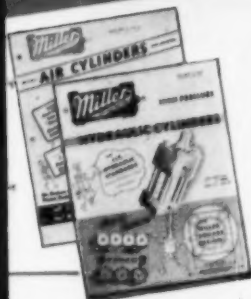
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Complete Miller cylinder line includes: air cylinders, 1½" to 20" bores, 200 PSI operation; low pressure hydraulic cylinders, 1½" to 6" bores for 500 PSI operation, 8" to 14" bores for 250 PSI; high pressure hydraulic cylinders, 1½" to 12" bores, 2000-3000 PSI operation. All mounting styles available.



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CLEVELAND • YOUNGSTOWN • DAYTON • PITTSBURGH • PHILADELPHIA • BOSTON • HARTFORD • NEW YORK CITY • BUFFALO • ST. PAUL • GRAND RAPIDS • DETROIT • FLINT • FORT WAYNE • SOUTH BEND • INDIANAPOLIS • MILWAUKEE • LOUISVILLE • KANSAS CITY • SEATTLE • LOS ANGELES • SAN FRANCISCO • BALTIMORE • DENVER • ST. LOUIS • MOLINE • CHICAGO • HOUSTON • TORONTO, CANADA and OTHER AREAS

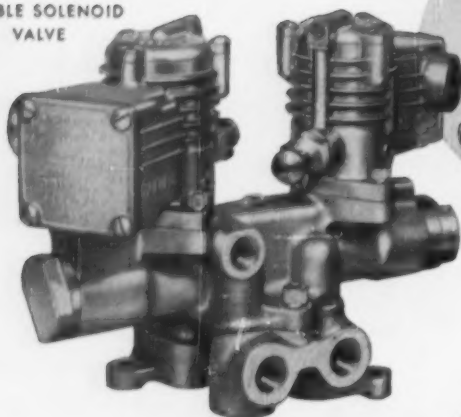


**MILLER FLUID POWER CO.**  
(Formerly MILLER MOTOR COMPANY)

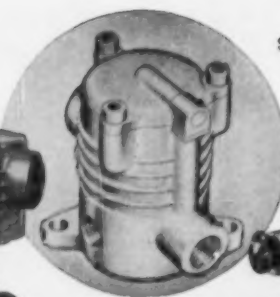
2030 N. Hawthorne Ave., Melrose Park, Ill.

AIR & HYDRAULIC CYLINDERS • BOOSTERS • ACCUMULATORS  
COUNTERBALANCE CYLINDERS

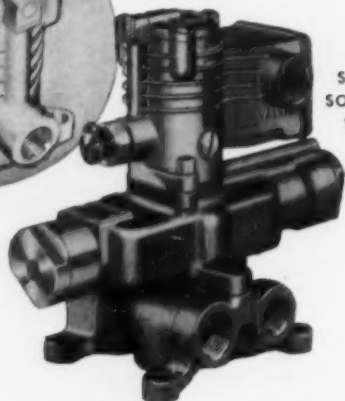
DOUBLE SOLENOID  
VALVE



SMALL & LARGE  
PILOT VALVE



SINGLE  
SOLENOID  
VALVE



# AIRMATION BY VALVAIR



AIRMATION by VALVAIR — a control of components for Automation in air, vacuum and hydraulics.

SINGLE OR DOUBLE SOLENOID VALVES, LARGE OR SMALL PILOT VALVES — Designed and built to J. I. C. Standards. Maximum Speed — Life — Range — Durability.

9 DIFFERENT CONTROL ASSEMBLIES with 5 body types and 5 sizes give you thousands of different combinations.

ASK FOR BULLETIN A14

## Valvair

Affiliate: Sinclair-Collins Valve Company

Representation in: Baltimore • Birmingham • Boston • Buffalo • Charleston, W. Va. • Chicago • Cleveland • Cranford, N. J. • Dayton • Denver • Detroit • Eureka, Calif. • Houston • Kansas City, Mo. • Logansport, Ind. • Louisville • Minneapolis • S. Pasadena • Philadelphia • Pittsburgh • Portland • St. Louis • Seattle • San Francisco • Syracuse • Montreal • Toronto • Vancouver



# FREE TECHNICAL LITERATURE

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

This section starts on p. 112

## Pneumatic bar feed

A 24-page booklet entitled: "Time, The Important Fourth Dimension of Production and Profits," has just been released. It demonstrates how the company's A. M. L. pneumatic bar feed, by keeping pace with time, feeds bar stock continuously into single spindle screw machines, turret lathes, centerless grinders, abrasive-wheel cut-offs, punch presses, cold headers, die machines and other equipment for periods up to eight hours. The booklet shows how this automatic production overcomes such inefficiencies as stock loading by hand, slow set-ups, and high reject rates. *Bar Feed Div., Lipe-Rollway Corp.* For your copy write on your company letterhead to address shown on reply card.

## Portomag

A new portable magnetic drill press is described and illustrated in a folder. Rugged and dependable, the Portomag gets in those tight corners. You can drill with-in 1/4 in. of the wall. Safety features are listed in the folder. *Lupear's Tool & Die Co.* For free copy circle No. 15 on postcard, p. 117.

## Aluminum forgings

This booklet illustrates and describes Harvey's scientifically designed forged sections, which save weight without sacrificing efficiency. The many advantages of aluminum forgings are described. Topics covered include: press forgings, impact extrusions, hand forgings, and aluminum forging alloys. *Harvey Aluminum Sales, Inc.* For free copy circle No. 16 on postcard, p. 117.

## Structural plastics

A comprehensive booklet on agilene (polyethylene) and agilide (non-plasticized polyvinyl chloride) has been published. Semi-finished products such as piping, tubing, valves and fittings are also fully described in the catalog. Agilene and Agilide are available in sheet, rod and block, which can be readily converted to the finished item, by forming, drilling, sawing, machining or dressing with ordinary wood working tools. The catalog includes the reagent charts, showing the chemical resistance of Agilene and Agilide to a wide and varied group of reagents. *American Agile Corp.* For free copy circle No. 17 on postcard, p. 117.

## Multi-duty radial

The high-speed multi-duty Radial is described in a new folder. Its many features include: spindle speed ratio of 40-to-1, twelve speeds (up to 3200 rpm) through direct-reading dial, automatic tapping reverse, adjustable spring counter-balance, and rigid, accurate spindle mounted on five precision ball bearings. *The Cincinnati Gilbert Machine Tool Co.* For free copy circle No. 18 on postcard, p. 117.

## MorLifts

A booklet on the MorLift has just been issued. No other lift, in its capacity range, can move loads with so little effort. It lifts, carries, stacks and does any and all handling jobs with great ease of operation. It can move every type of load up to 2000 lb. *John Morrell Manufacturing Co.* For free copy circle No. 19 on postcard, p. 117.

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 4/28/55

Circle numbers for Free Technical Literature or Information on New Equipment:

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31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
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Company . . . . .

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FIRST CLASS  
PERMIT No. 38  
(Sec. 349 P.L.R.)  
New York, N. Y.

BUSINESS REPLY CARD  
No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

THE IRON AGE

Post Office Box 77  
Village Station  
NEW YORK 14, N. Y.

## FREE TECHNICAL LITERATURE

### Punched card machine

How to get more from punched-card methods with modern Remington Rand machines is described in a 6-page folder. In easy-reference chart form, the complete line of punched card machines is listed, showing their use in the preparation of necessary management records for billing, receivables, sales, payroll and production. Twenty-five punches, reproducers, computers, arrangers and printers are illustrated and described briefly. *Remington Rand Inc.*

For free copy circle No. 20 on postcard, p. 117.

### Magnesium and titanium

A new 8-page pictorial folder shows the facilities and services of Brooks & Perkins for the working of magnesium and titanium. Also shown are commercial products produced by B&P. Relative weights of common metals are given. *Brooks & Perkins, Inc.*

For free copy circle No. 21 on postcard, p. 117.

### Buyer's guide

The 1955 edition of the G-E Instrument Transformer Buyer's Guide, containing basic, up-to-date information on the complete General Electric line is available. The fully illustrated, 100-page publication contains ratings, ASA accuracy classifications, and prices of all Standard G-E indoor and outdoor potential and current transformers. Listings of ratio and phase-angle tests, tables of replacement types, and mechanical and thermal data are included. *General Electric Co.*

For free copy circle No. 22 on postcard, p. 117.

### Cast weld construction

A reprint of a technical article on cast-weld construction of high-alloy steel parts is now being offered. The article discusses in detail the field of application for cast weld techniques. It elaborates on improving the soundness of complicated castings and points to economies that may be realized. Diagrams are freely used in the article. *Cooper Alloy Foundry Co.*

For free copy circle No. 23 on postcard, p. 117.

### FOR MORE LITERATURE

Many companies offer free literature and other information in their advertisements. For the names of these firms see the company listings in the index of advertisers.

### Air control valves

Airmatic Valve offers a 66-page catalog illustrating its entire line of 2-way, 3-way and 4-way air control valves for high-pressure or low-pressure installations. Each type valve, cylinder and strainer is handled separately in the catalog. Helpful information on its outstanding features, application data, dimensions, specifications and parts list breakdown is provided. *Airmatic Valve, Inc.*

For free copy circle No. 24 on postcard, p. 117.

### Multi-purpose presses

A 6-page bulletin describes Model 150-ton CU-3 hydraulic press, a multi-purpose, triple-action metal-working press. Features and specifications are listed. On-the-job photos show the press in action handling a great variety of metal-working operations including drawing, trimming, coining, flanging, sizing, and tapering. This press permits both the blankholder and die cushion to be used in combination or singly. *The Hydraulic Press Mfg. Co.*

For free copy circle No. 25 on postcard, p. 117.

### Microscopes

The value of three-dimensional microscopes for industrial assembly lines, inspection operations and research laboratories is described in a 38-page brochure in great detail. It features three photographs which can be observed through a viewer that produces a three-dimensional depth effect. The proper microscope for a specific type of work can be determined by using a ten-question automatic model-selector card. *Bausch & Lomb Optical Co.*

For free copy circle No. 26 on postcard, p. 117.

**BUSINESS REPLY CARD**  
No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

**THE IRON AGE**

Post Office Box 77

Village Station

NEW YORK 14, N. Y.

FIRST CLASS  
PERMIT NO. 36  
(Sec. 561 P.L. 86-1)  
New York, N. Y.

Postcard valid 8 weeks only. After that use 4/28/55 own letterhead fully describing item wanted.

Circle numbers for Free Technical Literature or Information on New Equipment:

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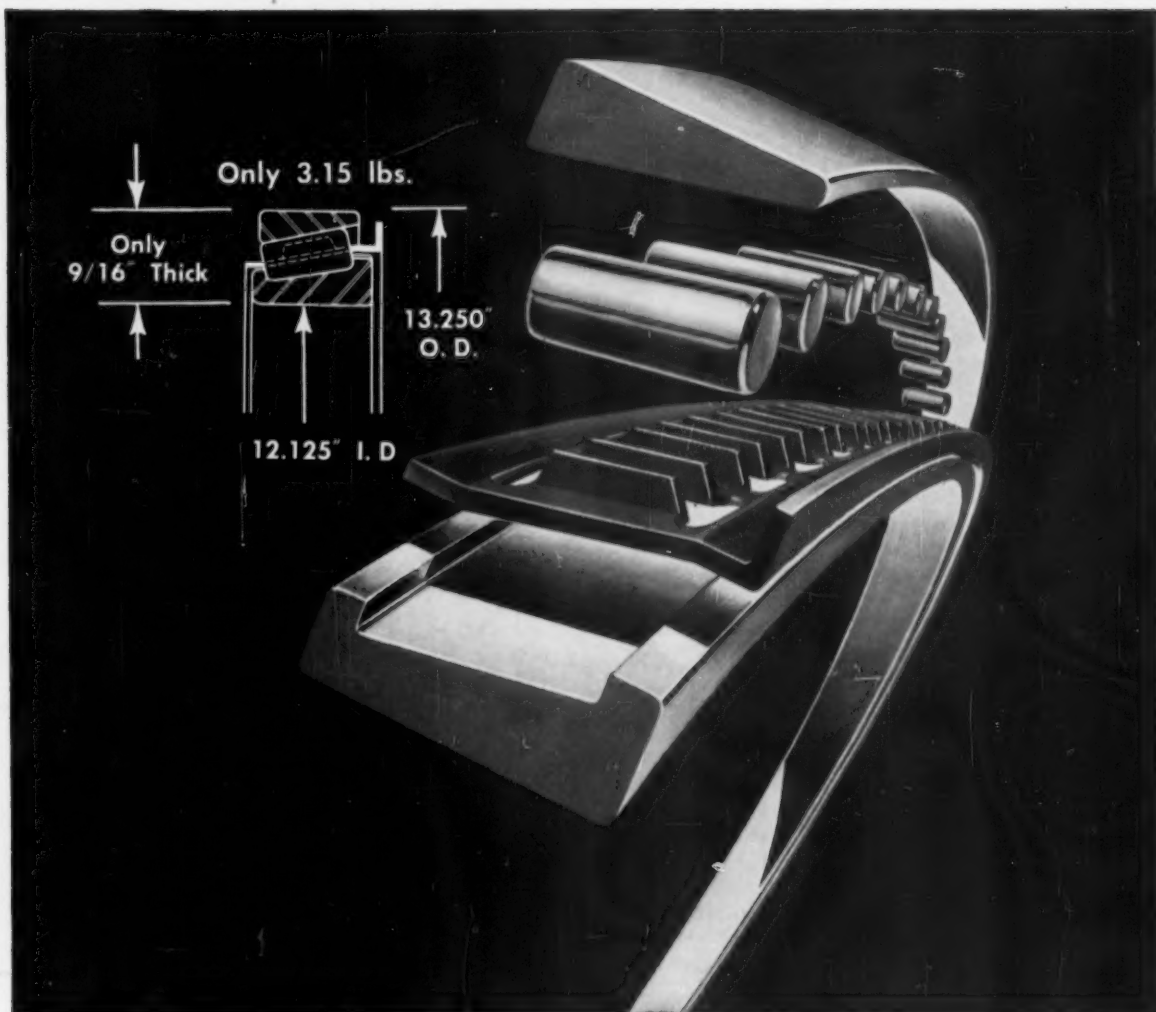
Title .....

Company .....

Co. Address .....

City ..... Zone .....

State .....



## Kaydon... world's thinnest tapered roller bearings

**R**eali-Slim — that's the name we've given our line of extremely thin-section, lightweight bearings. The bearing shown above is a *Reali-Slim*. *Reali-Slim* bearings are really strong, too! The single row, tapered roller bearing we're talking about, here, has a 33,000-lb. radial capacity—with 38,200-lb. thrust capacity. Over 1-ft. in diameter, yet it weighs only 3.15 lbs! These figures tell how *Reali-Slim* bearings combine minimum section with high strength and long life.

If you're looking for a whole new concept in thin-section, lightweight bearing design — look at Kaydon's

*Reali-Slim* line. In addition to hundreds of *Reali-Slim* standard sizes, there's a big variety of special races and separators to meet special applications. Kaydon engineers are prepared to give you valuable help with your application problems.

For more information write Kaydon of Muskegon. Ask for engineering Catalog No. 54-RS detailing:

★ *Reali-Slim Ball Bearings* — in Conrad, angular contact and 4-point contact types are available in seven standard cross sections from  $\frac{1}{4}$ " to 1.000" and in bore diameters from 4" to 40.000".

★ *Reali-Slim Roller Bearings* — in radial and taper roller types are available in cross sections from  $\frac{9}{16}$ " and in bore diameters from 5" to 40.000".



K-552

# KAYDON

THE

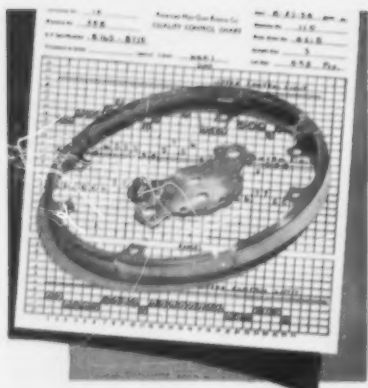
MUSKEGON • MICHIGAN

ENGINEERING CORP.

All types of ball and roller bearings — 4" to 120" outside diameter . . .  
Taper Roller • Roller Thrust • Roller Radial • Bi-Angular Roller • Spherical Roller • Ball Radial • Ball Thrust Bearings.

April 28, 1955

119



**No Rejects!**

among **NON-GRAN** machined parts

Isn't this the way you want extremely close-tolerance parts machined for assembly in your product? Non-Gran's use of **STATISTICAL QUALITY CONTROL** methods, in its contract machining of any metal, makes this vital difference. Write giving your requirements.



AMERICAN  
NON-GRAN  
BRONZE CO.  
Berwyn, Pa.  
Manufacturing Phila.

Write for book "Our  
Story in Pictures"

**QUANTITY  
PRODUCTION  
OF  
GREY IRON  
CASTINGS**

**ONE OF THE  
NATION'S LARGEST  
AND MOST MODERN  
PRODUCTION  
FOUNDRIES**

**ESTABLISHED 1866  
THE WHELAND  
COMPANY**  
CHATTANOOGA 2, TENN.

## TECHNICAL BRIEFS

### BRAZING: Simple Assemblies

**Gas-fired, automatic package unit has dial work table  
... Unskilled operator can braze up to 500 small to medium  
size assemblies per hour ... Unit is adjustable.**

Fast, dependable automatic brazing for small and medium-size assemblies is provided by a new self-contained, gas-fired packaged unit. Simple joints in small parts may be brazed by one unskilled operator at rates as high as 500 assemblies per hour.

The package unit was developed by Selas Corp. of America, Philadelphia, and is rigidly mounted on an integral structural steel frame.

#### Includes Many Items

Equipment includes a combustion controller to deliver fuel/air mixture at a predetermined ratio and pressure; fully adjustable burners for optimum heat pattern and heating rate; permanent or replaceable fixtures to support work components; a dial-type work-table to carry the assembly; and the necessary automatic timers, pneumatic indexing equipment and electric motors.

Provision may be made for specialized functions such as automatic feed and delivery and air- or water-controlled cooling. Installation requires only setting the machine in place and making connections to normal shop utilities.

Each automatic unit is engi-



**Simple fixtures ...**

#### WANT MORE DATA?

**You may secure additional information on any item briefed in this section by using the reply card on page 117. Just indicate the page on which it appears. Be sure to note exactly the information wanted.**

neered to meet a range of jobs as specified by the user. Fixtures for the different work assemblies are easily replaced; the operator merely lifts each fixture and places another over two guide pins.

All burners are fully adjustable to accommodate a variety of assembly shapes, and each can be turned off individually without affecting the operation of the others. Varying heat requirements may also be met by adjustment of the electric timer.

In many cases, complete change-over from one run to the next can be made simply by changing fixtures and adjusting manifold pressure (indicated by dial gage) to a previously determined setting.

### Flame Cutting:

**Machine cuts four  
plate sides at once.**

Production speed was tripled by the installation of a flame-cutting setup which cuts and bevels all four sides of large steel plates simultaneously. Cutting progresses at the rate of 12 in. per min., and the machine handles plates as large as 10 by 40 ft.

#### Travel on Cranes

At each of the two plate ends an Oxweld plate-edge preparation



## TECHNICAL BRIEFS

unit is mounted on a machine carriage. The units travel along stationary gantry-type cranes which are adjusted and locked in position. Plate side cutting is similar to cutting on the end, except that two plate-edge preparation units are mounted on a center gantry which travels the length of the plate.

Each nozzle block contains four nozzle heads, three for cutting and one for preheating. The cut and bevels are made simultaneously.

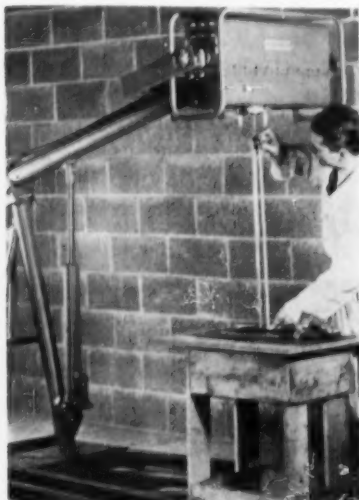
### Two-Man Operation

Only two men are required to operate the apparatus. One handles the two cutting units mounted on the center gantry and the other operates the units on the end gantries. A hand-operated oxy-acetylene cutting torch attached to the middle gantry is used to cut the long strips of metal removed from the plate into manageable pieces. The strips fall into bins located under the edge of the plate.

## Inspection:

### Crane gives X-ray camera more flexibility.

To simplify radiographic testing methods, the Balteau Electric Corporation, Stamford, Conn., has developed a hydraulic crane for handling the "camera" of its in-



**Any direction . . .**

April 28, 1955

## Look overhead..see "NORTHERN"



**NORTHERN**

**CRANES uniquely adapted  
for the Foundry Yard!**

These two 10-ton, 100-foot span NORTHERN OVERHEAD ELECTRIC TRAVELING CRANES are installed in the foundry yard of a large automotive manufacturing company. To provide better vision and control of loading and unloading in all crane operations, the operators' cabs are attached to and travel with the crane trolleys.

Transfer loading to other handling equipment by means of batch weighing and loading hoppers was designed, built and installed by the customer company.

Here is another example in the short-cutting of repetitive, unprofitable materials handling. It demonstrates the substantial benefits of imaginative thinking in solving cost problems in all areas of foundry operation.

Let us send you Bulletin G-700  
and SE-108.

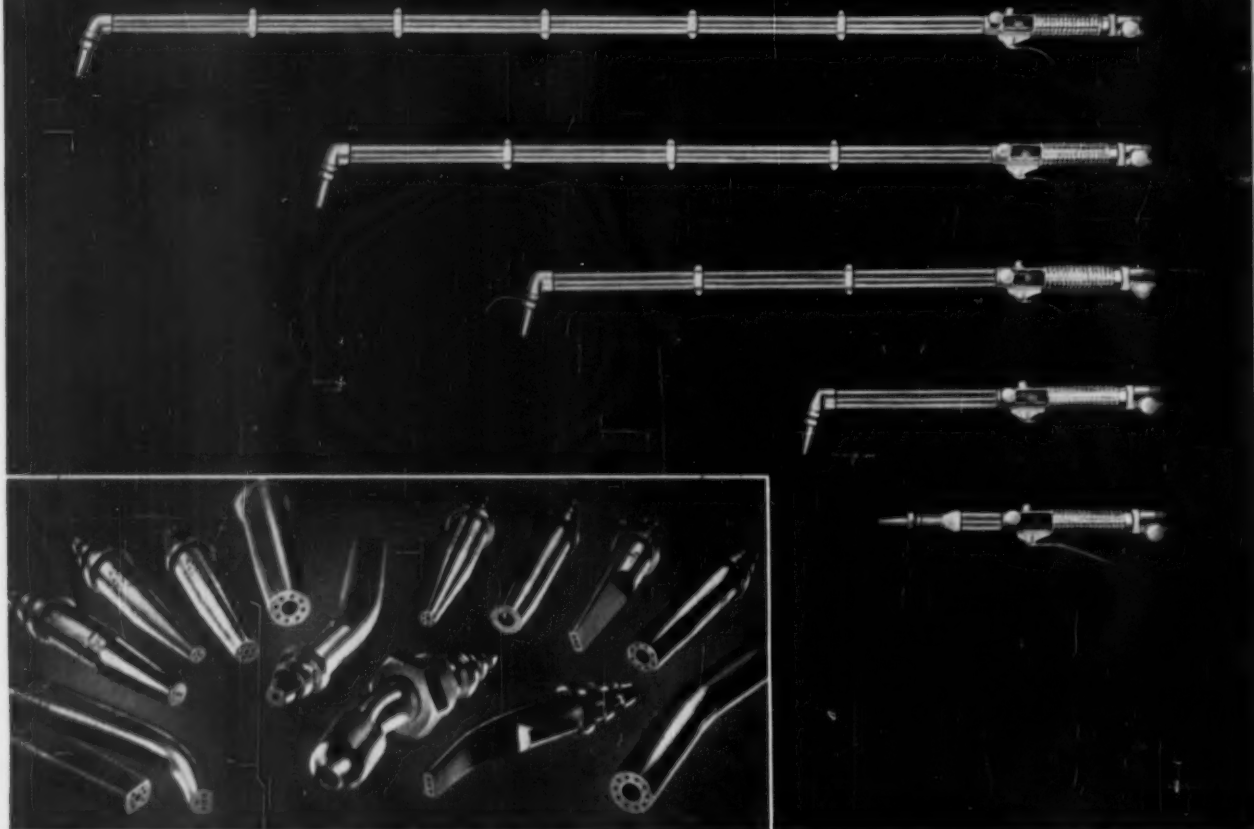
**NORTHERN**

**CRANES-HOISTS-TRAVELATORS**

**NORTHERN ENGINEERING WORKS**

210 CHENE ST., DETROIT 7, MICH.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND.....



Inset: A few of the many Airco tips available for use with Airco torches.

## Airco Cutting Torches... from 13 inches to 6 feet in length!

The Airco 9000 series hand cutting torches are designed to make short work of jobs in scrap cutting, rivet washing and general maintenance.

Here's flexibility at its finest. Torches range from the 13-inch length for working in confined areas to the 72-inch length for keeping heat and fumes at a distance and include the standard 21-inch model. Torch heads are available with 45°, 75°, 90° and straight heads—your choice of monel or bronze.

An extremely wide selection of cutting tips, (over 25), make them adaptable for cutting metal thick-

nesses from sheet metal up to 12" steel. Tips are available for cutting with acetylene, propane, or natural gas.

Companion accessories include the Airco Flash Circle Burner which is adjustable to cut circles 2½" to 17" in diameter. This unit can also be used with all cutting attachments and machine cutting torches.

See your Airco representative or Authorized Airco Dealer for detailed information and assistance —or— write Airco direct. Request Catalog 818.



### AIR REDUCTION

60 East 42nd Street • New York 17, N. Y.

*Divisions of Air Reduction Company, Incorporated, with offices and dealers in most principal cities*

Air Reduction Sales Company  
Air Reduction Pacific Company

Represented internationally by  
Air Company International

Foreign Subsidiaries:  
Air Reduction Canada Limited  
Cuban Air Products Corporation

Products of the divisions of Air Reduction Company, Incorporated, include: **AIRCO**—industrial gases, welding and cutting equipment, and acetylenic chemicals • **PURECO**—carbon dioxide, liquid-solid ("DRY-ICE") • **OHIO**—medical gases and hospital equipment • **NATIONAL CARBIDE**—pipeline acetylene and calcium carbide • **COLTON**—polyvinyl-acetates, —alcohols, and other synthetic resins.



## AIRCO items for flame cutting

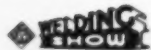
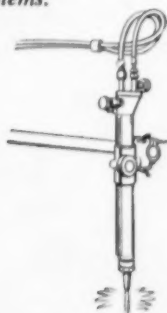
The Airco 3000 Series Cutting Torches have the same rugged design features as the 9000 Series (shown at left). The principal difference is that the high-pressure oxygen control mechanism is designed so the cutting oxygen can be eased on gradually. This is particularly helpful in hole piercing, rivet washing, or rivet and stay bolt cutting.

The 3000 Series is also suitable for general purpose cutting of steels ranging from thin gauge to 12" thicknesses.



Airco two-hose and three-hose machine cutting torches are designed for use with standard Airco tips. The two-hose torches are for light and medium machine gas cutting primarily with Airco portable gas cutting machines like the Radiographs and Monographs.

The three-hose torches are for use with large Airco shape cutting machines such as the Duo-graph, Oxygraph, and Travo-graph. Write for literature on these items.



VISIT  
BOOTH  
254

## TECHNICAL BRIEFS

dustrial X-ray unit. It is designed to serve either as a stationary mounting or as a mobile base for on-location factory inspection in the factory.

### Raises and Lowers

The crane permits the operator to raise and lower the X-ray head to a maximum height of 87 in. and a minimum height of 24 in. An extension boom widens the range of movement to a low of 14 in. and a high of 101 in. The head may also be rotated through 360° around the vertical or horizontal axes.

## Threading:

**Flexible machine cold-forms many threads.**

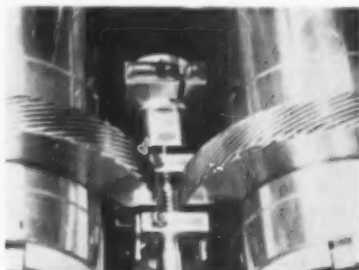
Power, quick-change features and flexibility to roll-form a wide variety of screw thread shapes and sizes are combined in a new chipless, cold-forming machine recently demonstrated.

Called the Lanhyrol, this latest product of the Landis Machine Co., Waynesboro, Pa., will automatically or manually produce accurate, strong threads and splines of excellent finish. Threads or serrations are formed by pressure rolling a blank between two cylindrical dies that are precision ground to the proper form.

### To 3-in. Diameter

With suitable rolls, the Lanhyrol will produce 3/16 to 3 in. diam left or right hand threads of all types with the exception of square threads and threads of high taper.

With high production continuous rolling, the machine will produce threads to Class 2 and 3 tolerances. Tolerances up to and in-



**Worm threading . . .**

# NOW!

## DUAL ARC CONTROL on AC as well as DC

**New Lincoln Idealarc gives choice of "soft arc" or "forceful arc" to suit the job**

For the first time on AC welding you can select the right type arc for each job. That's because Lincoln Dual Arc Control gives you both "soft arc" for smooth, clean welds and "forceful arc" for penetration.



**LINCOLN IDEALARC**  
with DUAL  
ARC CONTROL.  
Has Arc-Booster  
starting on DC as  
well as AC.  
Operates on  
single-phase power.

Idealarc can be purchased to furnish both AC and DC welding current. It can be bought as a straight AC welder to which a unit can be added at any time to furnish DC current as well as AC.

### LEARN HOW YOU BENEFIT

Send for Idealarc  
Bulletin 1343. Write:



**THE LINCOLN ELECTRIC COMPANY**  
Dept. 1504 • Cleveland 17, Ohio

*The World's Largest Manufacturer  
of Arc Welding Equipment*

## TECHNICAL BRIEFS

cluding Class 4 can be maintained by the infeed, thrufeed and reciprocal rolling techniques.

UN form threads ranging in pitch from 5 to 32 threads per in, acme threads of 6 or more threads per in, and worm threads equivalent to 8 dia. pitch and finer can be produced under normal conditions. Maximum pitch limitations will vary because they are dependent on the flow characteristics, elongation, tensile strength and hardness of the workpiece.

### Uses Auxiliary Equipment

Threads may be rolled on hollow, extremely long and odd shaped parts through the use of auxiliary equipment.

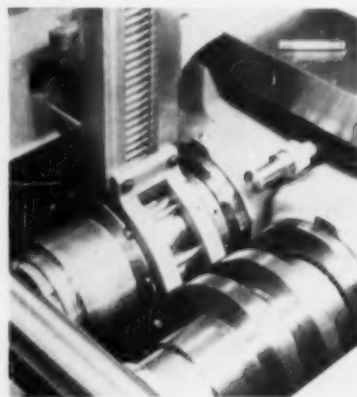
The two thread roll dies are mounted on parallel horizontal spindles which are power driven.

A speed change gear unit provides 16 spindle speeds, ranging from 14 to 126 r.p.m., through the use of four pairs of "pick off" change gears.

### Threads Carriage Bolts

One example of the machine's productivity is its ability to continuously and automatically roll-form threads on 5/16 in. diam carriage bolts at the rate of 135 per minute. U. N. C. thread specifications on these 1020 steel bolts are: 5/16 in. diam, 18 pitch, 1 1/8 in. long and class 2 tolerance.

This application utilizes two segmental rolls that are ground with three relieved sections. These rolls are maintained at predetermined fixed distance apart as re-



Hopper feed . . .

*"the shearing specialists"*  
**THE HALLDEN MACHINE COMPANY**  
THOMASTON, CONNECTICUT

Sales Representatives  
The Wean Engineering Co., Inc. (Ferrous) Warren, Ohio  
T. E. Dodds (Non-Ferrous) Pittsburgh, Pa.  
W. H. A. Robertson & Co., Ltd. (Ferrous & Non-Ferrous) Bedford, England



# SEE THE EXTRA PERFORMANCE FEATURES THAT MAKE YOUR BEST BUY—

*"Buffalo"*

**No. 22  
DRILL**

Forged alloy  
steel back gears

6 spline  
alloy steel  
spindle

Hardened tool  
steel clutch  
members

Hand-scraped  
ways

Coolant  
reservoir  
in base

Above are just a few long life, convenience and accuracy features that make the "Buffalo" No. 22 Drill your best buy in the large-drill class. Years of satisfactory performance in thousands of shops prove this. Have us mail you details on the No. 22, and see why no comparable drill gives you so much for the money!

*The Machine Tool Show, Chicago, Illinois—Sept. 6-17, 1955*



**BUFFALO FORGE COMPANY**

492 BROADWAY

BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING

PUNCHING

SHEARING

BENDING

April 28, 1955

125

Perkins custom-made Gears *make any device—big or small, simple or complex—*

**more efficient,  
more serviceable,  
more saleable...**

because every human and mechanical advantage in Gear Making goes into their production—and all under management who have spent their lifetime in the Gear Business.

*You furnish the specifications*

*we'll produce the gears!*



**PERKINS MAKES:**

to customers' specifications, in all materials, metallic and non-metallic: bevel gears, ratchets, sprockets, ground thread worms, spiral gears, helical gears, spur gears with shaved or ground teeth.

**NOTE:** The PERKINS PRECISION SPRING COILER is the latest development in the spring

coiler field and eliminates entirely the use of arbors and long set-up time. It is a complete self-sufficient machine and enables you to make the spring you want when you want it—in seconds. The coiler produces any type of spring, in any diameter and any pitch with this range: Wire sizes .005 to .125. Diameter, from 3/32" to 12" and larger. Size of the compact coiler is only 7 1/2 x 16". A POWER MODEL is available. Information on request.

**PERKINS MACHINE & GEAR CO.**

103 Circuit Ave., WEST SPRINGFIELD, MASSACHUSETTS

**TECHNICAL BRIEFS**

quired to obtain the desired pitch diameter.

The workpieces are delivered from a hopper to the workrest cage which encases the roll on the left hand spindle. The workrest cage indexes the work into and away from the rolling position. Indexing is timed to correspond with the arrival of the relieved sections of both segmental rolls at the rolling position. Thus, three bolts are threaded for each revolution of the rolls.

**Shipping:**

**Wire containers help improve service.**

Damaged or delayed shipments can add to the shipper's cost and upset a customer's production schedule. But by using Cargotainers to ship universal joints, Blood Brothers Machine Div. of Rockwell Spring and Axle Co. has improved customer service. At the same time, the company saves an estimated 89 pct over the cost of the containers installed.

**Used Wooden Boxes**

The Allegan, Mich. firm shipped its products in wooden skid boxes to customers within a 1200 mile radius until early in 1954. Since then, the company has replaced most of its boxes with Pittsburgh Steel Products Co.'s welded steel wire mesh containers.

The Cargotainers used have 4,000 lb capacity. They are 36 in. wide by 46 in. long by 24 in. high, and are equipped with special 9 1/2 in. legs, reinforced with gusset plates, to accommodate platform trucks and withstand rugged usage.

**Customers Pleased**

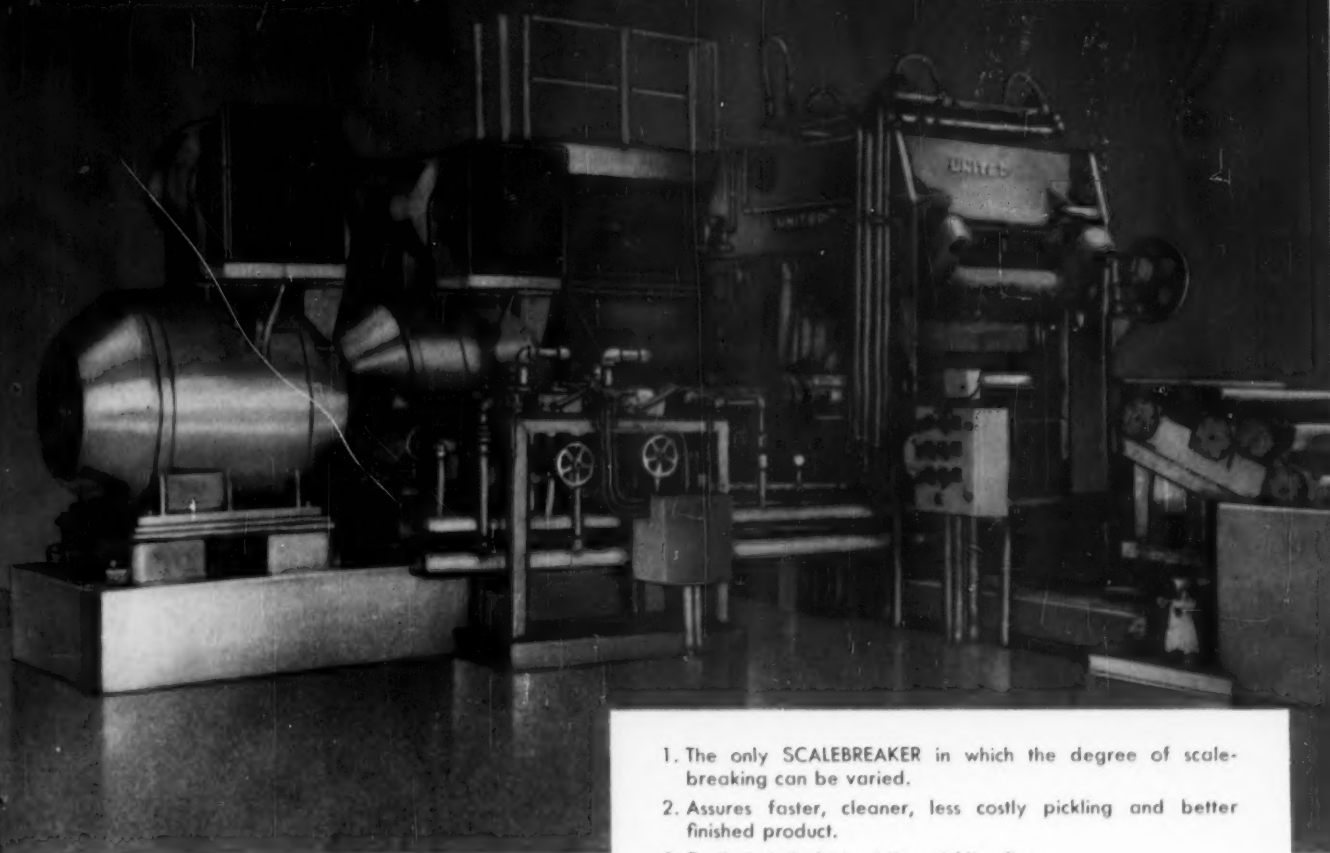
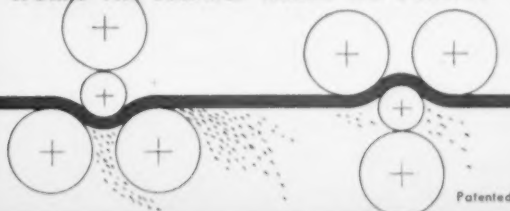
Customers have been pleased to find shipments virtually undamaged and easier to unload. They can tier loaded containers and fold those awaiting return shipment, thus saving storage space. Inventory is simpler because stock is visible.

On each shipment, the container's cost is charged to the customer. On its return this amount

# UNITED<sup>®</sup>

## NEW *Strip Processing* SCALEBREAKER

"WORKS THE SURFACE WHERE THE SCALE IS"



1. The only SCALEBREAKER in which the degree of scale-breaking can be varied.
2. Assures faster, cleaner, less costly pickling and better finished product.
3. Easily installed in existing pickling lines.

Write today for complete engineering data.

# UNITED

## ENGINEERING AND FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA



Plants at: Pittsburgh • Vandergrift • Youngstown • Canton • Wilmington (Lobdell United Division)

Subsidiaries: Adamson United Company, Akron, Ohio  
Stedman Foundry and Machine Company, Inc.,  
Aurora, Indiana

Designers and Builders of Ferrous and Non-Ferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

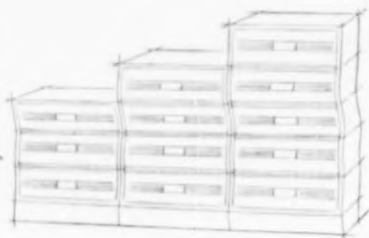
# USE STANDARD HALLOWELL DRAWERS AND DRAWER TIERS IN PLANT MODERNIZATION



## CATALOG NO. 320-1415

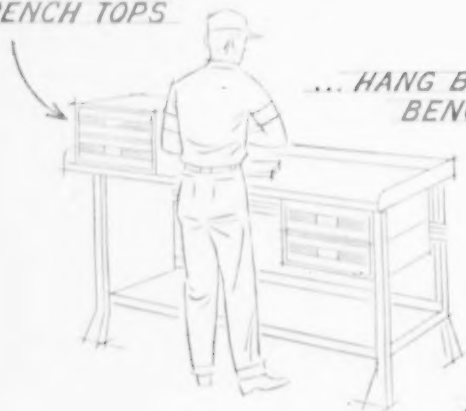
3 DRAWERS 14" x 15" x 5". OVERALL DIMENSION  
OF ENCLOSURE: 15 1/4" x 15 1/4" x 6 9/32".  
BASE 3 1/4" HIGH. ALSO WITH DRAWERS  
14" x 20" x 5" AND 20" x 20" x 6"

MAKE VERTICAL  
TIER CABINETS



USE THEM INSIDE  
CABINET BENCHES.

PUT THEM ON  
BENCH TOPS



... HANG BELOW  
BENCH TOPS



BUILD STORAGE WALLS



Standard Interchangeable Units.  
Completely Enclosed Drawers. Sturdy  
Welded Construction. Stocked by  
Leading Shop Equipment Dealers.  
Send for Literature.  
Hallowell Shop Equipment Division,  
Standard Pressed Steel Co.,  
Jenkintown 17, Pa.

HALLOWELL SHOP EQUIPMENT DIVISION



JENKINTOWN PENNSYLVANIA

BENCHES (CABINET, WORK, UNIT) • STOOLS AND CHAIRS • SHOP DESKS • TOOL  
STANDS AND CABINETS • DRAWERS, DRAWER TIERS • STEEL CARTS • SHELVING



## TECHNICAL BRIEFS

### Wooden boxes lasted about 5 trips while new containers last 25 . . .

is credited to his account. Formerly, some 29 pct of the wooden boxes were not returned. At present the per cent of non-returns has dropped to zero. Over-all savings to customers is an estimated \$3,035.02 a year.

#### Substantial Savings

Savings to Blood Brothers are also substantial. Life of a wooden skid box of the type formerly used came to approximately five round trips. Life of Cargotainers is estimated at over 25 trips.

Elimination of non-returns and minimum container losses through damage in shipment allow the company to use fewer Cargotainers for the job previously done with wooden skid boxes. Savings are estimated to average 55 pct of the wire container cost over a 25-trip service life.

#### Lower Repair Cost

There is also a saving in repair. Disregarding the cost of repair materials, the savings in labor alone are estimated at 19 pct of a Cargotainer's cost over its 25-trip life.

### Automation:

#### New control for complex machinery.

An ultra-reliable control system with no moving parts will direct the operation of complex machinery and is said to be a major step toward completely automatic manufacturing.

The new "director system," was developed by Westinghouse Electric Corp.

#### Special Transistors

The basic components of the control system are special magnetic amplifiers and transistors. They have no moving parts nor filaments to burn out. As compared to an electrical relay control system with perhaps a 20 million or so cycle limit, the com-



## Keep Up to Date

on

## STAINLESS STEEL PLATE and HEADS

with G. O. Carlson, Inc.

## Weekly Stock Lists

Carlson's Weekly Stock List tells you just what you want to know:

- ▶ Type, Gauge, Width and Length of stainless steel plate in stock.
- ▶ Type, Size and Gauge of stainless steel heads in stock.
- ▶ Sales representatives and warehouse distributors ready to serve you.

Save time and money by checking this weekly list. If you do not see your requirements listed, please ask for what you need . . . you may be surprised how fast we can produce it! Carlson is first with what is probably the largest stock of stainless steel plate in one location—produced to meet chemical industry standards. Remember, Carlson is your one-stop source for complete package orders—including plates, heads, rings, circles, flanges, forgings, bars and sheets (No. 1 Finish).

# G. O.

*Stainless Steels Exclusively*

# CARLSON, INC.

Plates • Plate Products • Forgings • Bars • Sheets (No. 1 Finish)  
THORNDALE, PENNSYLVANIA

— District Sales Offices in Principal Cities —

Write for your copies of Carlson's Weekly Stock Lists . . . use this convenient coupon.

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_



*The drive that set a NEW STANDARD of*  
**PERFORMANCE**  
*for Fork Lift Trucks*

No other fork lift truck can match the smooth-power performance of a Towmotor with *TowmoTorque Drive*. There's no clutch to throw, no gears to shift. The exclusive *TowmoTorque Creep Control* allows full power for lifting while positioning the truck. "Forward" or "reverse" can be preselected *while truck is in motion* for fast get-away! And *TowmoTorque* lasts the lifetime of the truck with less maintenance than any other drive.

*TowmoTorque* is the only drive engineered for all fork lift truck operations. It is available in Towmotor Fork Lift Trucks exclusively. Get the facts from your nearby Towmotor Representative, or write TOWMOTOR CORPORATION, Div. 1504, 1226 E. 152nd St., Cleveland 10, Ohio.



**FORK LIFT TRUCKS and TRACTORS**  
**SINCE 1919**

*Manufactured Only By Towmotor Corporation—The Pioneer Maker Of Fork Lift Trucks*

#### TECHNICAL BRIEFS

#### **Can control millions of cycles without showing signs of wear . . .**

Many says director systems can be built to reach the same number of cycles in a matter of hours or days and still show no signs of deterioration or wear.

#### **Large and Small**

A director system might range in size from a unit as big as a table radio to a control panel the size of an upright piano, or larger, depending upon the complexity of the job it has to do.

Westinghouse says the extreme reliability of director systems will be most welcome in the control of complex operations involving many different machines. An example is the transfer machines used in the manufacture of automobile engine blocks, although they are not the ultimate in control complexity that can be handled by the director systems.

#### **Tested Extensively**

Director systems have been built and tested in a number of operations. These include the control of a fully-automatic six-story elevator; a supervisory control system for remote operation of electrical power systems; a relatively simple punch-press control, and a much more complicated spiral milling machine control.

#### **Control Furnace Charging**

Others include a system for the selective delivery and removal of ingots from a soaking pit; a skip-hoist director which permits the automatic charging of a blast furnace according to a program selected by the operator, and a control for an automatic welder.

In the case of the automatic welder, which was installed several months ago, over 250,000 welding operations have been made to date under the control of the director system. It was pointed out, however, that these test control systems do not indicate the limit of possible applications.

# A NEAT WAY TO PLAY SAFE: JAL-TREAD FLOOR PLATE



**J&L  
STEEL**

Jal-Tread floor plate combines the strength and durability of high quality steel with a neat, distinctive checkerboard pattern scientifically designed for *safety*.

Whatever your application . . . in new construction . . . new equipment . . . or replacement jobs, Jal-Tread will assure you of these advantages:

**Safe Footing**—300 miniature squares per square foot—all of uniform height—provide maximum linear friction surface that protects you against lost-time accidents.

**Easy Fabrication**—The Jal-Tread straight line pattern simplifies welding, flanging, shearing, bending, punching, and

drilling operations. Experience shows that Jal-Tread can be cold-formed on standard plate bending machines.

**Easy Cleaning**—The Jal-Tread straight line gutter pattern permits quick, thorough sweeping and draining in any direction.

For safe, long-lasting flooring always specify J&L Jal-Tread . . . it's available at leading distributors everywhere.

***Jones & Laughlin***  
STEEL CORPORATION — Pittsburgh

# Kinnear Steel Rolling Doors

(made by the originators of the famous interlocking steel-slat door)



**give you highest efficiency,**

(they open straight up, coil overhead, waste no floor or wall space)

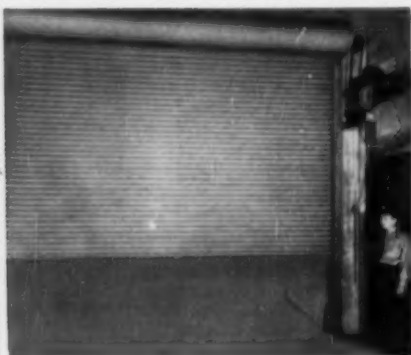


**extra all-metal protection,**

(their rugged steel construction resists fire, wind, theft, vandalism)



Heavy galvanizing adds 1.25 oz. of pure zinc per sq. ft. of metal by ASTM standards.



**and lower operating costs**

(delivering up to 20, 30, and 40 years of continuous daily service with little or no repair costs, as proved by many case records in Kinnear's files.)

Kinnear Rolling Doors are built any size, for old or new buildings, with manual, chain, crank or motor operation. Write for complete information.)



**THE KINNEAR MFG. CO.**

FACTORIES:

1760-80 Fields Avenue, Columbus 16, Ohio  
1742 Yosemite Ave., San Francisco 24, Calif.  
Offices and Agents in ALL Principal Cities

## TECHNICAL BRIEFS

### Anodizing:

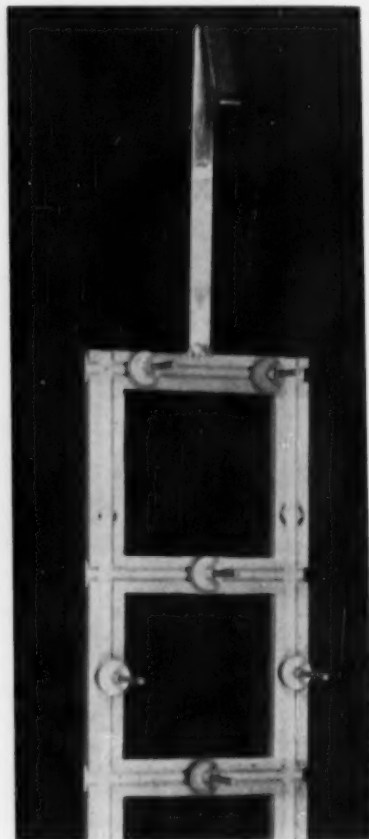
**Rack has mobile contact points.**

A versatile rack for anodizing aluminum and magnesium alloys is designed to accommodate jobs that would ordinarily require racks of a wide variety of sizes and shapes.

The rack features mobile contact points that can be moved along a track to the desired dimension and set by lock-nuts to provide effective and excellent electrical contact. The idea is developed at the Corps of Engineer Research and Development Laboratories, Fort Belvoir, Va.

#### Permits Major Savings

Just three 6½ x 25 in. racks at the laboratories have saved time, money, materials and storage space for anodizing jobs which would formerly have required as many as 60 racks of different dimensions.



**Mobile contacts . . .**



**INDUSTRIAL WASHER MAKER**  
Gets 67 lb. Weight Saving

**FURNACE SHIPPING WEIGHT**  
Cut from 1029 to 926 lbs.

**MACHINE COVER MAKER CUTS**  
Shipping Weight by 24 pounds

**END FRAME SHIPPER SAVES**  
40 lbs. with New Container!

**SHIPPING WEIGHT REDUCTION**  
on Transformer is 156 pounds

**Engineered wirebound by General Box reduces shipping weight of high-voltage disconnect switch by 106 lb.**

## Ship fewer pounds...save more freight dollars with General-engineered containers

Almost every General-engineered container design brings a reduction in shipping weight. The freight dollars saved usually represent an important sum in themselves. And it's an amount otherwise wasted, because this saving is just one of many benefits that come with the switch to General-engineered containers.

Better product protection is an advantage you can count on because of General's specialized experience and its completely equipped testing laboratories. Reduction in packing costs is another. For example, reductions of 50% in packaging time are not uncommon.

It's easy to find out what General Box can do for you.

### Engineered Containers for Every Shipping Need

- Wirebound Crates and Boxes • Generalift Pallet Boxes • Corrugated Fiber Boxes • Cleated Corrugated and Watkins-Type Boxes • Stitched Panel Crates • All-bound Boxes

VISIT US IN BOOTH 633 AT THE MATERIALS HANDLING EXPOSITION, CHICAGO

First step is to telephone the office near you, or write direct. We'll send a man who will quickly be able to advise the second step. You incur no obligation. Be sure to ask for your copy of the new "Heavy-Duty" issue of "General Box."

Factories: Cincinnati; Denville, N. J.; East St. Louis; Detroit; Kansas City; Louisville; Milwaukee; Sheboygan; Winchendon, Mass.; General Box Company of Mississippi, Meridian, Miss.; Continental Box Company, Inc., Houston.



# General Box

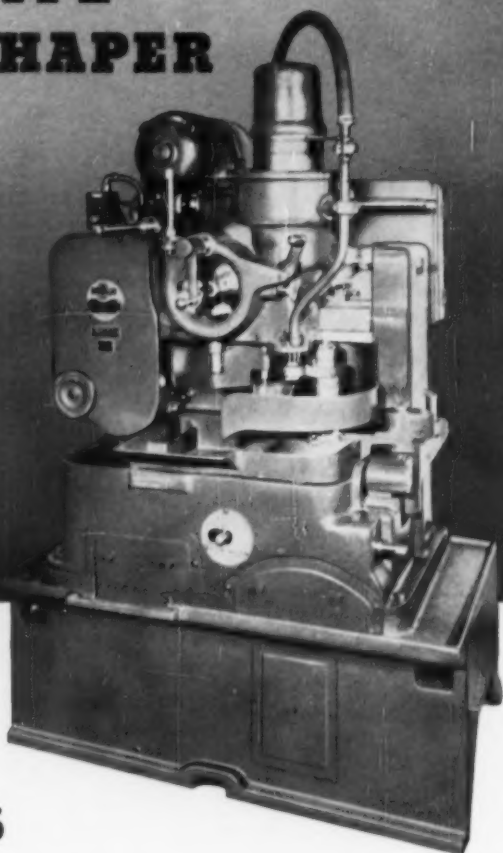
1829 Miner Street, Des Plaines, Illinois



# FELLOWS 7A-TYPE GEAR SHAPER

*Approved*

by Gear Men for 1955



Dollar for dollar, the Fellows No. 7125A Type Gear Shaper has long proved a sound investment for *any* shop that requires high speed gear production within its size capacity. This machine scores high on all counts:

**VERSATILITY**...produces spur and helical external gears up to 7", internals up to 6" p.d., as well as cams, racks, face gears, many special contours.

**SPEED**...cuts production costs on both long and short runs.

**PRECISION**...holds close tolerance even while taking substantial cuts.

**FAST SET-UP**...and rapid change-over allows you to get more production from the machine.

**DEPENDABILITY**...like *all* Fellows Gear Shapers!

**CALL IN** your Fellows Representative for data about the complete Fellows "line-up" ...plus facts about the Fellows Plan for deferred payment. **WRITE, WIRE or PHONE** any Fellows Office!

THE

*Fellows*

GEAR SHAPER COMPANY

Head Office and Export Dept., 78 River St., Springfield, Vt.

Branch Offices: 319 Fisher Bldg., Detroit 2, Michigan • 5835 West North Avenue, Chicago 39, Illinois  
2206 Empire State Bldg., New York 1, N. Y. • 6214 West Manchester Avenue, Los Angeles 45, California

## NEW EQUIPMENT

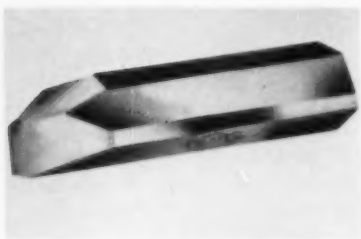
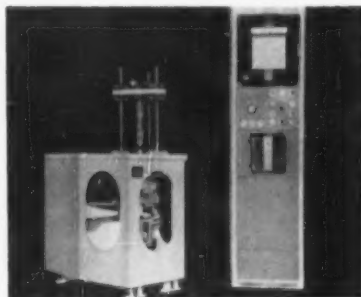
**New and improved production ideas, equipment, services and methods described here offer production economies... for more data use the free postcard on page 117 or 118**

### Dynamic testing of metals for creep and fatigue

An economical dynamic creep-testing machine offers high accuracy, ease of setup, compactness, and simplicity of maintenance. A static force of 0 to +5000 lb and an alternating force of 0 to  $\pm 400$  lb at 3600 cpm, with a maximum amplitude of 0.050 in., may be applied. A creep up to 0.375 in. can be accommodated. Separate cabinet

houses all controls and controllers for the basic machine and the high temperature unit, and also accommodates the required instrumentation for temperature and creep recording. Performance is said to be equal to any comparable commercial machines and at a lower price. *The Ivy Co.*

For more data circle No. 27 on postcard, p. 117.



### Diamond holding alloy prevents loose diamonds in tools

A new diamond holding formula named m-28 has been perfected. Combined with a new setting process, the alloy guards against diamond loss even under the most difficult operating conditions. M-28 alloy has the ability to pack tightly around and adhere to the diamond

when a considerable amount of the metal has been ground away due to a hang-up of the dresser. The company guarantees free replacement of any new shape tool should failure of setting occur. *American Coldset Corp.*

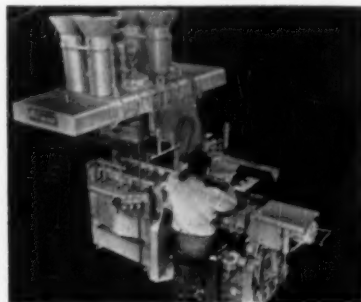
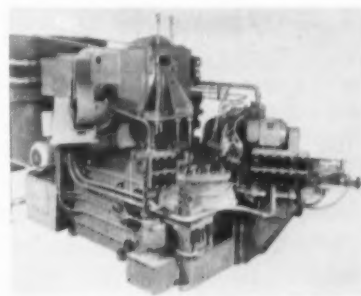
For more data circle No. 28 on postcard, p. 117.

### Machine automatically assembles, burnishes, drills

This vertical hydraulic machine with automatic cycle assembles bushings into the wrist pin hole of an automotive connecting rod; burnishes the bushing, center drills one wall of the wrist pin bore and then drills an oil hole through. The unit was developed and built around an American 3-way type machine column, arranged with a

six station index table. Mounted on the table are six, 2-station fixtures. Operator loads and unloads parts at the front as the fixtures index past the station. The assembly, burnishing and two drilling units are arranged around the periphery of the indexing table. *American Broach & Machine Co.*

For more data circle No. 29 on postcard, p. 117.



### Coreblower is all-pneumatic, all-automatic

The new Flexibromatic blows, rolls over, and draws 240 cores per hour. The unit is simple to operate and easy to service since there are no troublesome electrical contacts or relays. Indexing of the box, blowing, rollover and drawing, ejection, and delivery of the box are all automatic. The unit does the work; the operator need only actuate one valve, place a core

plate and remove a finished core on each cycle. Actually one operator is able to handle two or more of these units since the operation of one unit requires only 20 pct of his time. TR Cormatic units with Flexibromatic coreblowers have capacity for cores weighing up to 60 lb. *Beardsley & Piper.*

For more data circle No. 30 on postcard, p. 117.

Turn Page



## when it comes to **AUTOMATION**

This eight station multiple spindle dual loading Transfer Type Machine uses an air-hydraulic transfer mechanism. Various drilling and tapping operations are performed on cast iron carburetor throttle bodies at the rate of 450 per hour at 100% efficiency. Parts are located and clamped automatically in previously machined butterfly valve holes at each station. Parts ride free on rails between work stations. New brochure shows why, when it comes to automation . . . it pays to come to . . .



*HARTFORD*  
*Special*

THE HARTFORD SPECIAL MACHINERY CO. • HARTFORD 12, CONN.

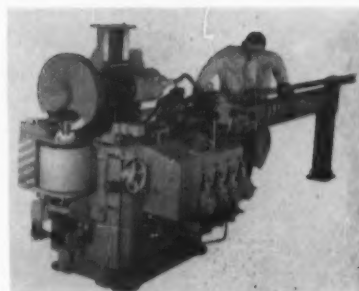


### Hydraulically forms refrigeration tubing members

Automatic tube bend and cutoff machine produces refrigeration tubing return connectors at the rate of 3600 per hr. Operating on copper tubing the unit bends short U shapes at the tube ends and cuts them off from the remaining tube lengths. Versatility was a major design object and the machine

can produce a wide variety of bent tubing shapes with only minor tooling changes. The hydraulic actuation may be either manually controlled or automatically cycled through the use of limit switches and solenoid valves. *Hautau Engineering Co.*

For more data circle No. 31 on postcard, p. 117.

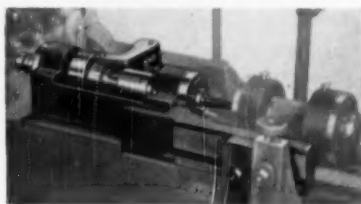


### Sliding head automatic lathe mass produces parts

Parts up to 3/16 in. diam and 2 3/4 in. long can be mass produced on the new sliding head automatic lathe, the Howard D-187. Using the same machine base, power units and tooling employed on the 1/2-in. capacity D-500, extremely high fin-

ish is achieved by spindle speeds up to 15,000 rpm, under pressure lubrication. High tolerances are held by a new, highly sensitive sliding head. *Howard Automatic Div., Detroit Cam & Tool Co.*

For more data circle No. 32 on postcard, p. 117.



### Machine cuts hydraulic wire braid hose

The Model 1149-12 cutter-skiver is designed for cutting hydraulic wire braid hose, either cotton or rubber covered. And in the case of rubber covered hose, it removes the outer layer of rubber preparatory to assembly with re-usable Hoze-lok fittings. This electric powered unit has been introduced to provide speedier fabrication of

hose assemblies. The cutting wheel, belt-driven, has 10 in. diam. The skiving wheel, mounted on the motor shaft, embodies a high grade wire brush which removes the rubber cover of the hose to a predetermined length. Machine handles 1/4 to 2 in. ID hose. *Parker Appliance Co.*

For more data circle No. 33 on postcard, p. 117.



### Diecastings every 5 sec with speed and economy

A low-cost, high speed diecasting machine is said to handle shot capacities up to 2 1/2 lb with all the features and workmanship of larger and costlier machines. Features include all steel welded construction; 80-ton locking pressure; automatic electric cycling at high speed—up to 700 shots per

hr; die plates 17 3/4 x 17 3/4 in.; die stroke 6 1/2 in.; blast type furnace blower. The machine is available in air or hydraulically operated plunger goose neck type for zinc, tin, lead, or cold chamber for aluminum, brass, magnesium. *American Die Casting Machinery Co.*

For more data circle No. 34 on postcard, p. 117.



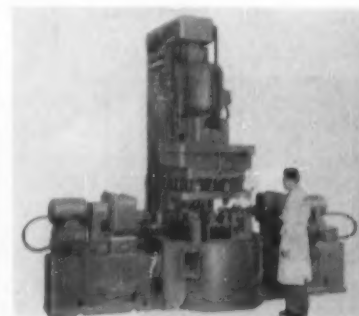
### Drills, chamfers and reams cylinder blocks

Air compressor cylinder blocks are being drilled, chamfered and reamed at the rate of 144 pieces per hr by a special machine tool. It is a dial type with four stations: one for loading and three for drilling, chamfering and reaming. The work cycle is automatic with a fluid motor drive for indexing. Two similar parts are handled by the machine through the use of a

two position, progressive type work holding fixture. Standard and special parts of the machine are completely interchangeable to provide for easy maintenance and flexibility for part design changes. Other features include hydraulic feed and rapid traverse, construction to JIC standards. *Cross Co.*

For more data circle No. 35 on postcard, p. 117.

Turn Page





## the casting that couldn't be cast!

They said it couldn't be done. Quality requirements were extreme . . . Dimensions had to be closely held . . . Tolerances were tight . . . Good surface finish was needed. Others had tried it unsuccessfully in green sand, dry sand, core mold and lost wax.

They said it couldn't be cast, but COOPER ALLOY advanced know-how made the difference. After thorough study of all the variables, we put it on the shell mold machine, bolted every mold, formed every shell at precisely the same temperature and investment time, and poured each casting at exactly the same temperature. The result, sound castings in full agreement with these specifications:

### MATERIAL COMPOSITION

carbon	.15-.25%
chromium	17.00-20.00%
nickel	12.00-15.00%
silicon	1.00% max.
manganese	2.00% max.
sulphur	.03 max.
phosphorous	.04 max.
molybdenum	1.75-2.50%

### DIMENSIONS TOLERANCE SURFACE FINISH INSPECTION

14 3/4" in diameter 2 1/2" thick  
±.010 across bolt circles (approx .11")  
approx. 175 RMS  
100% x-ray 100% zygo

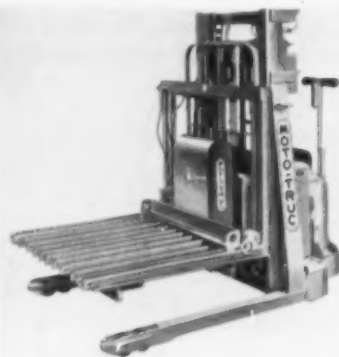


If you've been having trouble with a difficult casting job, why not let the Cooper Alloy advanced know-how tackle the problem for you.

**COOPER ALLOY**  
CORPORATION • HILLSIDE, N.J.  
Foundry Products Division

### Handles 6000 lb

This die handling attachment with 6000-lb capacity can be fitted to any standard Moto-Truc lift truck. Four way entry into attachment permits loads to be pushed and pulled from the sides as well as from the front. Since the push-pull ac-



tion is electric and not hydraulic there are no oil lines to connect or disconnect. Entire action of the die attachment is controlled by remote control push buttons. The truck is the standard Moto-Truc Hi-Lift and when not being used with the die handling attachment can be used for other operations. Truck has roller-grip controls and is powered by an 18 v battery. Moto-Truc Co.

For more data circle No. 36 on postcard, p. 117.

### Industrial filter

Improvements in the removal of the contaminant, elimination of tuning rods, and an enlarged filtering area are found in the new Model 10 filter. A fresh filtering area is rotated into position while simultaneously the contaminated cake is ejected. Filtering screen



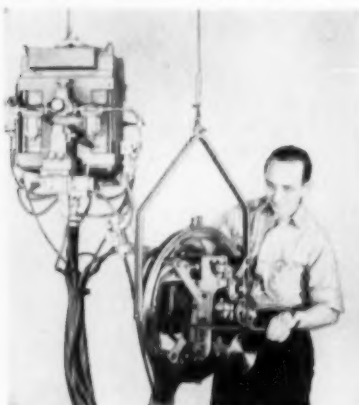
## NEW EQUIPMENT

is divided into 8 equal parts—screw mounted. Filter screen material and size or screen opening can be supplied in Monel, stainless steel, brass or bronze to fit all requirements. Contaminant retained on the filter screen is removed by air pressure and is dropped directly into the exit chute. Filter may be used on an individual machine unit, or as a central filter for many units. *Murray-Way Corp.*

For more data circle No. 37 on postcard, p. 117.

### Seam welds 200 ipm

New portable seam welder will weld 180° vertical axis, 360° horizontal axis. Welder wheels and shafts are assembled into one unit that is mounted in a low friction ball bearing ring. Pressure up to 700 lb is



applied on the welding wheels by an air cylinder. Lower wheel is driven by an air motor through a reduction gear box to give a consistent drive. The portable seam welder is light and sturdy, reducing operator fatigue. Its specially designed, high efficiency, stack core transformer meets JIC requirements. *Progressive Welder Sales Co.*

For more data circle No. 38 on postcard, p. 117.

### Loosens corroded nuts

For factories and shops, savings of time and equipment are made with a non-oily penetrant that loosens corroded nuts, or bolts and larger sized parts of mechanical equipment. The product is fast acting and penetrates deeply. It is safe to use because it is nonflammable and does not spread over the work. *Olin Mathieson Chemical Corp.*

For more data circle No. 39 on postcard, p. 117.

Turn Page

## let the job **BREAK-EVEN POINT** determine the economics

...and the machine

In machining duplicate parts calling for long or short runs . . . small and intricate parts requiring extreme accuracy . . . or when making heavy cuts that call for plenty of "beef" in the machine, let the job break-even point dictate the economics.

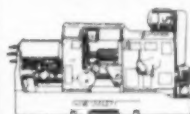
A careful analysis of all job factors—the number of pieces, number and kind of finishing cuts, the set-up time—will show how to do the job most economically.

Then, if the job analysis shows you need a multiple or single-spindle bar or chuck-type automatic to get the lowest per piece cost, you will find that National Acme can provide the **RIGHT** machine for the job.

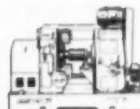
A broad background of experience gained in the design and manufacture of the world's only complete line of multiple-spindle bar and chucking automatics and fully automatic turret lathes, gives National Acme a versatility throughout its sales, engineering and service departments, not to be found in less comprehensive lines of machines.

National Acme thus can provide not only the **RIGHT MACHINE**, but *experienced tooling advice as well*. It's an unbeatable combination for profits.

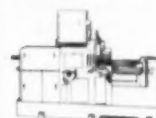
Why not talk it over with a National Acme representative soon?



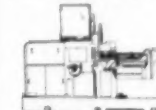
**BAR AUTOMATICS**  
4 Spindle — 7 sizes, 1 to 7 1/2"  
6 Spindle — 9 sizes, 1 1/2 to 6"  
8 Spindle — 6 sizes, 1 1/2 to 4"



**CHUCKING AUTOMATICS**  
4 Spindle — 2 sizes, 10 and 12"  
6 Spindle — 4 sizes, 5 1/2 to 12"  
8 Spindle — 2 sizes, 6 and 8"



**TURRET LATHES**  
(Bar Type — Fully Automatic)  
Single Spindle — 3 sizes, 2 1/2 to 3 1/2"



**TURRET LATHES**  
(Chuck Type — Fully Automatic)  
Single Spindle — to 12" cap.

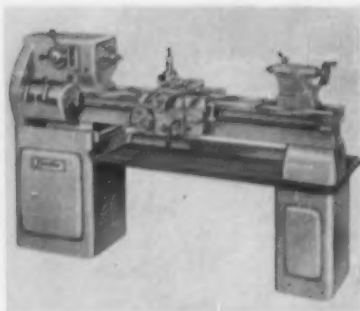


**CHUCKING AUTOMATIC**  
Single Spindle ("Chuckmatic")  
To 12" capacity

**THE NATIONAL  
ACME COMPANY**

175 East 131st Street, Cleveland 8, Ohio

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### Rugged power combined with toolroom accuracy

This 15-in. geared head lathe is functionally designed to permit easy, cost saving operation. All controls are centrally grouped within instant reach of the operator. Features include the wide, heavy bed; all anti-friction bearing headstock with zero precision tapered roller bearings supporting the spindle; the cam action tailstock clamp and the easy shifting spin-

dle speed dial. All gears in the headstock run in oil, are extra wide and designed for quiet, efficient operation. The gear box is large and has 60 different pitches and feeds. Lead screw direction can be changed while lathe is running. Each lathe is rigidly checked for accuracy and individually inspected for 19 different accuracy tests. *Sheldon Machine Co.*

For more data circle No. 46 on postcard, p. 117.



### THE WORLD'S FINEST SELF-ALIGNING COUPLING

When you realize that all the horsepower goes through the coupling, you will realize that the most expensive coupling is the *least expensive*.

AJAX Dihedral Couplings handle angular, offset and end float misalignment heretofore considered impossible.

The secret of the performance of AJAX Dihedral Couplings begins with AJAX dihedral tooth design. It permits holding tooth clearance to lubrication film requirements. Load is distributed at center of teeth, the point of greatest strength. All teeth are case hardened to combine hard wear surface with tough core.

#### AJAX Advantages Affect Every Department of Your Business.

AJAX Dihedral Couplings give new economies in design, manufacturing and assembly. Be sure to look into the advantages of this vital connecting link between driving and driven machines.

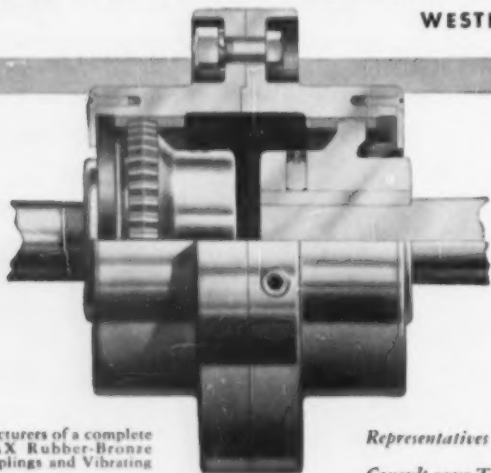
#### Hundreds Proven in 5 Years On-the-Job Field Tests.

AJAX Dihedral Couplings have been through every test of time and service on rolling mills, paper mills, dredges, earth moving machinery and other heavy duty installations.

Phone the AJAX representative or write the AJAX factory for case histories, and you will spark-plug some worthwhile thinking.

**AJAX FLEXIBLE COUPLING CO. INC.**

WESTFIELD, N. Y.

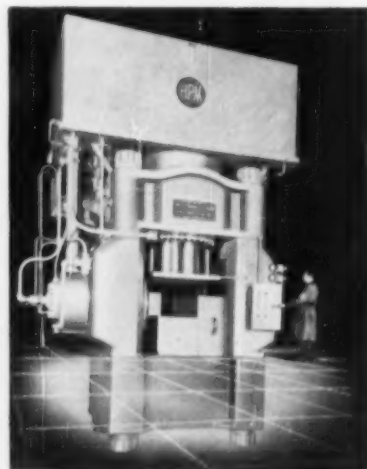


Also manufacturers of a complete line of AJAX Rubber-Bronze Bushed Couplings and Vibrating Conveyors.

Representatives in Principal Cities  
Consult your Telephone Directory

### Briquetting press

Believed to be one of the largest combination vertical-horizontal operating hydraulic briquetting presses in the country, this press is now producing briquettes from



titanium sponge for Mallory-Sharon Titanium Corp. The press has two actions: the vertical ram has a maximum pressure of 3000 tons and the horizontal ram 1500 tons. It forms briquettes 3 to 6 in. thick x 6 in. wide x 20 in. long. Ruggedly constructed for heavy duty service the press weighs approximately 500,000 lb; has an overall length of 25 ft 10 in. with 20 ft above floor level. *Hydraulic Press Mfg. Co.*

For more data circle No. 41 on postcard, p. 117.

### New packaging material

Unusually high impact absorption and compression recovery are claimed for a new type biondulated cushioner made from forged fibers—permanently crimped. This material, called Carbion, is made



## NEW EQUIPMENT

without any glue. It is manufactured at extremely high temperatures and pressures, resulting, it is stated, in a forging of fibers into an astounding degree of perma-

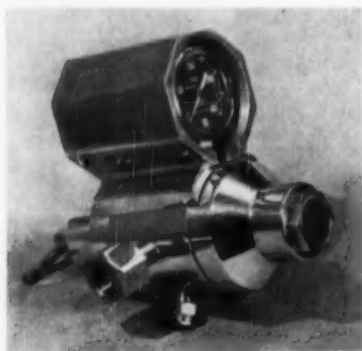


nence. Carbon has 4 major and 2 minor impact dispersion patterns. It is available in a variety of flexible sleeves, sheets and rolls in several types and weights of paper. *Sherman Paper Products Corp.*

For more data circle No. 42 on postcard, p. 117.

## Gas regulators

Outstanding delivery performance, safety and economy are claimed for new two stage gas regulators. Once the working pressure is set it will be maintained until the cylinder becomes empty. A guard protects both gages from breakage. Oxo nozzle units make it possible to replace all internal parts of the regulators in 5 min. using only one com-



mon socket wrench. Simplicity of design, ease of repair and degree of interchangeability of parts are features of the regulators. There are over 100 new models including flow-meter type, single stage, line, and two stage types. There is an Oxo regulator for any welding or oxygen requirement. *Oxo Welding Equipment Co.*

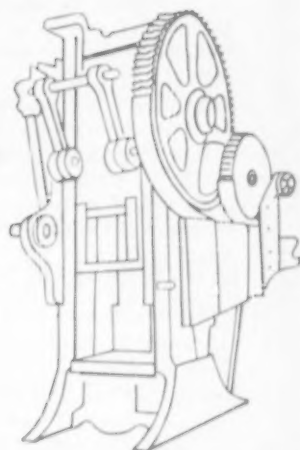
For more data circle No. 43 on postcard, p. 117.

Turn Page

# LET SIMMONS REBUILD AND MODERNIZE YOUR PRESSES

Investigate the important production, maintenance and tax savings of SIMMONS ENGINEERED REBUILDING for your: Lathes, Planers, Surface Grinders, Cylindrical Grinders, Vertical Millers, Openside Planers, Automatics, Vertical Boring Mills, Turret Lathes and Radial Drills.

A qualified Simmons rebuilding engineer will discuss it with you. Write, wire or phone today. Simmons Machine Tool Corporation, 1721 North Broadway, Albany 1, N. Y.



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Unconditional guarantee...our standard since 1910



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COLUMBIA TOOL STEEL COMPANY • CHICAGO HEIGHTS, ILL.

Producers of fine tool steels — All types immediately available through Sales Offices, Warehouses and Representatives in Principal Cities.



# NON-FLUID OIL

TRADE MARK REGISTERED

## BEST FOR MOTORS!

NON-FLUID OIL does not leak, creep or throw out, but stays in motor bearings to lubricate dependably until entirely consumed. Ordinary oil escapes from bearings and soaks motor windings—resulting in short-circuits and costly "burn-outs."

NON-FLUID OIL keeps electric motors running longer, cooler, cleaner. Buy NON-FLUID OIL and be sure; it does away with dangerous oil-soaked windings caused by so-called cheap oils, and is ideal for ring oiling motors. Other grades specially suited to ball and roller bearing type motors—offer equal advantages.

For proof of performance write for Bulletin No. 504 and free sample of NON-FLUID OIL.

### NEW YORK & NEW JERSEY LUBRICANT COMPANY

292 Madison Ave., New York 17, N. Y. • Works: Newark, N. J.

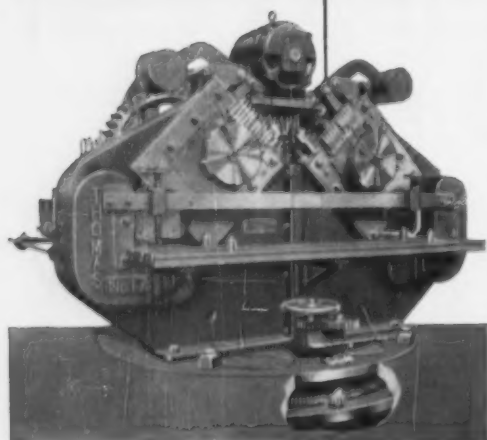
WAREHOUSES: Birmingham, Ala. • Atlanta, Ga. • Columbus, Ga. • Charlotte, N. C. • Greensboro, N. C. • Greenville, S. C. • Chicago, Ill. • Springfield, Mass. • Detroit, Mich. • St. Louis, Mo. • Providence, R. I.

Also represented in other principal cities

NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture.

the trend is  
to THOMAS

## double angle shears



The inbuilt quality and ruggedness of Thomas double angle shears insure years of trouble free service with a minimum of maintenance.

If you have a need for "high production" shearing of angles it will pay you to investigate Thomas.

Sizes are built for angles up to 8x8x1 1/4", with or without turn-table.

WRITE FOR BULLETIN 310-A

Punches • Shears • Presses  
Spacing Tables • Benders

**THOMAS**  
MACHINE MANUFACTURING CO.  
PITTSBURGH 23, PA.

### Full flow filters

Flow rates up to 900 gpm are offered in a new line of Honan-Crane full flow filters. The units can be used for filtering a wide variety of liquids including engine lube and fuel oils, metalworking oils and coolants, and parts washing solutions. Designed for in-line



installation, the filters combine compactness with exceptionally high flow capacity to insure continuous filtration of entire oil or coolant supply. Nine different sizes are available using one to 36 cartridges. All models have quick opening covers for changing cartridges. Filtration Div., Houdaille-Hershey of Indiana, Inc.

For more data circle No. 44 on postcard, p. 117.

### Tier-type rack

A latitude of adjustment is offered by a new tier-type rack that features adjustable horizontal and up-



right members. The rack may be erected quickly to suit any multiple of openings with the added feature of different shelf widths on variable vertical placements. This per-

## NEW EQUIPMENT

mits packing the rack to an almost solid cube, regardless of the shape or weight of the contents. Base of the unit is of tubular and channel members, with or without heavy duty casters. *Rack Engineering Co.*  
For more data circle No. 45 on postcard, p. 117.

## Measures work units

A Workometer installed on electric motor-driven, production machines furnishes a means of measuring the work of operators, tools, and machines. The instrument, unattended, measures the operator's work in work units which are a measure of the operator's efforts instead of



pieces or time. These impartially registered work units visually show the exact amount of work performed. For the small manufacturer, the instrument provides control, standards and incentives without the burden of a fixed overhead for a time study and standards department. The Workometers are leased, inspected, sealed and serviced and the accuracy maintained by the manufacturer. *Stewart Instrument Co.*  
For more data circle No. 46 on postcard, p. 117.

## Vest-pocket comparator

New vest-pocket size comparator, about half the size of the former model, employs a real glass reticle upon which the reticle pattern is etched in the glass and then filled with pigment to make reading easier. It measures at six power, in decimal inches and millimeters; compares hole diameters as small as 0.005 in., thicknesses to 0.002. *Edmund Scientific Corp.*  
For more data circle No. 47 on postcard, p. 117.

## EXTREME CONDITIONS

OF TEMPERATURE -  
PRESSURE-CORROSION  
MET WITH UNITED

## metallic O-rings

### Self-Energizing and Standard

16 page book of basic information regarding the application of metallic O-rings. *When to use Self-Energized metallic O-rings. Pressure and temperature ranges. Groove sizes. Degree of micro finish. Metals and plating surface.*

6 loose leaf pages of engineering data covering metallic O-ring and groove dimensions for nominal tube sizes of  $\frac{1}{8}$ ,  $\frac{1}{4}$  and  $\frac{1}{2}$  inch cross sections.

The most authoritative book ever issued on the application of metallic O-rings to industrial and aircraft static seal requirements.

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**UNITED AIRCRAFT PRODUCTS, INC.**

Box 1635, Dayton 2, Ohio

## cut down shutdowns..



## NON-SHRINK EMBECO PRE-MIXED GROUT

Used in the steel and metal-working industry to produce non-shrink grouts for rolling mills, hydraulic presses, planers, lathes, shapers, and other equipment. Also for

grouting building columns, anchor bolts, etc.

Many advantages over plain cement-sand grouts—

- Non-Shrink with full bedplate contact... maintains alignment.
- High Compressive and Impact-Resistant Strength... takes vibration, pounding action.
- Oil and Water Resistant.
- Flowable—Easily Placed yet does not shrink upon hardening.

Recommended by leading equipment manufacturers.

EMBECO PRE-MIXED GROUT IS READY TO USE—you add only water. Write for 8 page illustrated booklet.



send for booklet

Creators and Manufacturers

of Products to Improve Concrete and Mortar

THE

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CO.

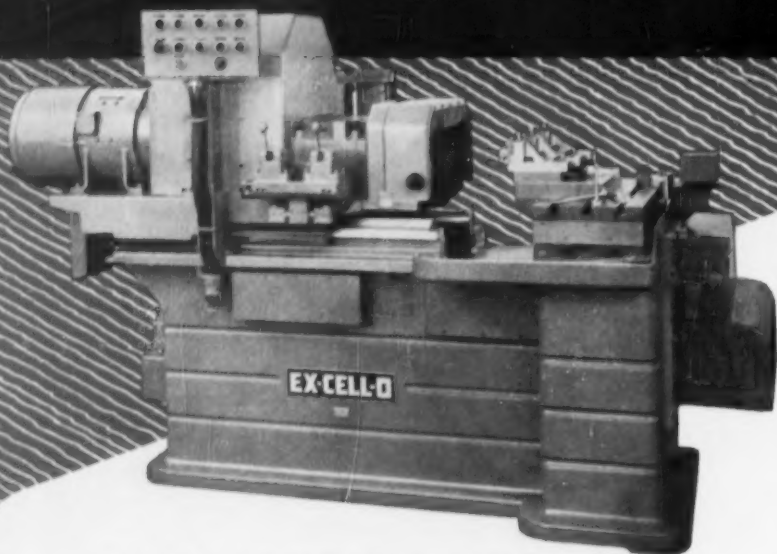
CLEVELAND 3, OHIO

Subsidiary of American Marietta Company

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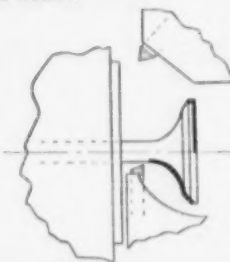
# NEW EX-CELL-O MACHINE

*contours valves by direct cam action (no levers)*

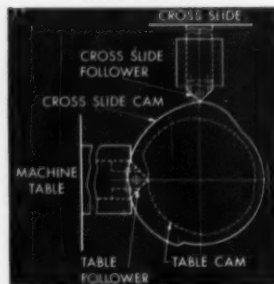


**NEW EX-CELL-O CAM BORING MACHINE, Style 312, equipped with two spindles and tooling for operations on valve heads.**

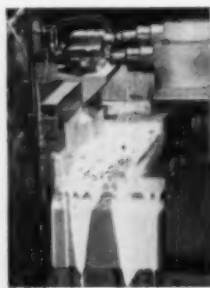
**VALVES ARE CONTOURED**, faced, turned, and taper-turned. This drawing shows the two tools used in each station. The paths they follow on the workpiece are indicated in heavy lines.



**CONTOURING ACTION:** Cams act directly on the slide—**NO LEVERS**. Separate cams for table and for cross slide are both on one shaft, giving exact co-ordination.



**CAMS CHANGED IN MINUTES:** Cam assembly swings out for quick change of operation. All motors are outside the base.



**CHIPS, COOLANT CANNOT ENTER THE BASE.** Large chip chute is cast integral with the solid top of the heavy nickel iron base.



55-1

## EX-CELL-O CORPORATION

DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING SPINDLES • CUTTING TOOLS • RAILROAD PINS  
AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT



## The Iron Age SUMMARY...

**Mills hard pressed to meet demand . . . Producers use defense reserve facilities . . . Export demand stronger . . . Deliveries lag.**

**Steel Mills on Defensive . . .** Steel producers are throwing everything but the kitchen sink into the battle to keep pace with demand. But it's a losing struggle.

As mills this week inched toward an all-time record, it began to look as though they will be on the defensive for most of the year. Consumer pressure continues to mount.

The industry is up against a deadly combination: (1) strong current demand, (2) consumer attempts to rebuild inventories, (3) hedging against a probable rise in steel prices in mid-year, and (4) some hedging against steel labor trouble.

**High Cost Units Producing . . .** Export demand already strong, will get stronger. Great Britain has lifted tariff duties on steel imports of urgently-needed products for the first time since Korea. Other European countries are in similar straits. They are buying every pound U. S. mills can spare.

Steel producers are now using so-called defense-reserve facilities to bolster output. These high cost melt shops are brought into play only when mills are hard-pressed to satisfy customer demand.

Although contending that consumer pressure

is not so great as in 1953, even conservative steel sales executives now admit that the market is good through August on the basis of orders on the books and the outlook for consuming industries.

It would not take much to convert the market into one that could be classed as run-away. And the railroads might be the deciding factor. Their steel ordering already has picked up, and their business is good. The mills are holding their breath. If railroads come in strong, as they well might, the market could be thrown into confusion.

**May Set Record . . .** Producers already have fallen considerably behind on their deliveries. Originally, it was flat-rolled, but the lag in deliveries has extended itself to include a broad list of products. This means that sooner or later the mills must refuse orders for a long enough period to bring deliveries into line with promises.

If production schedules are met this week, the industry may shatter the all-time record of 2,324,000 tons established in March 1953. Estimated rate of operation is 96 pct of capacity, which would be just 8000 tons below the record. Oftentimes, mills exceed estimated production, and it would take just a slight nudge to set a new mark.

### Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week†	Last Week	Month Ago	Year Ago
<b>Ingot Index</b> (1947-49=100)	144.0	142.5	141.8	101.9
<b>Operating Rates</b>				
Chicago	99.5	99.0	97.0	78.5
Pittsburgh	99.0	99.0*	97.0	71.0
Philadelphia	96.2	98.0	94.5	60.0
Valley	96.0	96.0	95.0	64.0
West	96.0	95.5*	98.0	56.5
Detroit	90.0	86.0*	91.0	72.0
Buffalo	105.0	105.0	100.0	67.5
Cleveland	98.5	109.9*	102.4	73.0
Birmingham	93.5	90.0	87.5	56.5
S. Ohio River	93.2	90.7*	91.0	74.0
Wheeling	98.0	93.0*	90.0	90.0
St. Louis	98.1	106.1	95.0	55.5
Northeast	104.3	89.0*	82.0	51.0
<b>Aggregate</b>	96.0	95.0*	94.5	68.5

\*Revised. †Tentative

### Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Month Ago	Year Ago
<b>Composite prices</b>			
Finished Steel, base	4.797	4.797	4.634
Pig Iron (Gross ton)	\$56.59	\$56.59	\$56.59
Scrap, No. 1 hvy (gross ton)	\$35.67	\$36.00	\$37.00
<b>Nonferrous</b>			
Aluminum, ingot	23.20	23.20	21.50
Copper, electrolytic	36.00	36.00	30.00
Lead, St. Louis	14.80	14.80	13.80
Magnesium, ingot	29.25	29.25	27.75
Nickel, electrolytic	67.67	67.67	63.08
Tin, Straits, N. Y.	91.50	92.125	91.25
Zinc, E. St. Louis	12.00	12.00	10.25

## Tight Market Ups Steel Costs

**Purchasing agents find steel costs rising as market tightens . . . Demand for all products continues at a high level . . . See heavy shapes strong into 3rd quarter.**

♦ **ALTHOUGH** steel prices are holding steady, purchasing agents are finding that average steel costs are on the rise. This is typical of what can happen when the market tightens.

Higher average steel costs are due to (1) purchases of warehouse steel by users who normally obtain all their requirements from the mill; (2) purchases at premium prices from so-called steel brokers; (3) higher freight costs due to purchases from distant mills, and (4) purchases of products carrying heavier extra charges than the consumer normally uses.

From all indications, this situation will continue into third quarter. Demand for virtually all products continues strong. The certainty of heavy carryovers in flatrolled and some other shapes combined with current requirements promises to keep the market in a turmoil through the summer and early fall.

The Committee of Stainless Steel Producers, American Iron and Steel Institute, announced major changes in the published designations for stainless steel types. New additions to the 300 and 400 series bring the total of standard designations to 35. Changes have also been made for the 501 and 502 heat resisting steels which are grouped with but not classified as stainless.

AISI said the changes reflect improved industry practices, elimination of government controls, and an effort to provide a wider degree of flexibility in working stainless.

Included in Republic Steel Corp.'s \$35 million expansion program are plans to increase silicon strip capacity at Warren by 1500

tons per month, and installation of equipment at Youngstown to produce plastic-coated steel pipe. Hot and cold-rolled sheet expansion plans at Gadsden, Ala., were announced earlier.

**SHEETS AND STRIPS . . .** Big carryovers into the third quarter and eagerness to get onto third quarter books characterize the market for cold-rolled sheets. Impetus continues to come from automotive sources. All districts continue to report auto steel purchasers most demanding. Their pressure, which is difficult to resist, makes it tough on smaller buyers who are getting squeezed to some extent. The strong cold-rolled sheet market is pulling the strip demand along with it. In Chicago, strip is being booked into August. Other markets report similar activity because of the difficulty in obtaining coils. Automotive orders for third quarter are coming in, indicating no letup in demand at least for early autumn.

**GALVANIZED . . .** Users indicate they will fill books for the third quarter almost as soon as they are opened. Some are already speaking for tonnages of galvanized sheets. Booming construction industry provides most of the market steam.

### Purchasing Agent's Checklist

**WAGES:** Modified GAW is on the way . . . . . p. 55

**STEEL:** Buyer places emphasis on reliable supply source . . . . . p. 59

**PLATE:** Deliveries into June, more tightening coming . . . . . p. 61

**AUTOS:** Ford may add new line in addition to Continental . . . . . p. 72

**TOOLS:** ODM to buy machine tools for ship turbine industry . . . . . p. 83

**BARS . . .** **Midwestern** demand is as strong as ever, or stronger. Record setting pace established in March is continuing in April with deliveries in Chicago out as far as July. Little inventory building is possible under present conditions and checks show little evidence of inventory buying, although not from choice. Consumers would like a comfortable stock, but can't get ahead. In Detroit, third quarter orders are now being accepted from automakers.

**PLATES . . .** Sizable carryovers into the third quarter are reported in most market areas. Purchasers in Detroit are out of luck in the second quarter and substantial carryovers into July are inevitable. Chicago mills can still promise July delivery while Pittsburgh market is characterized by delayed deliveries and orders extended into third quarter. Some increase in railroad demand is reported in the East, but shipyard orders have not shown much stepped up strength.

**STRUCTURALS AND SHAPES . . .** This market is similar in pattern to plates with carryovers assured in most market areas. There is still open space on the books in the West. Cleveland reports some weakness at the fabricator level. Heavy standards are showing real strength in Chicago and Pittsburgh mills are producing light, standard, and wide-flange at capacity with first half books loaded.

**WIRE PRODUCTS . . .** A critical situation is developing in Detroit where automotive demand has placed spring manufacturers in a tight spot. The tight market may even get tighter with no letup in sight. At the same time, the seasonal fencing demand is tightening up the merchant wire market in the Midwest. One Chicago producer is 27 pct over a year ago, a record sales figure. Orders for first half are being turned down and one Midwest producer is sold out through August. Demand for wire products is nearest thing to a boom in the product rundown.

**PIPE AND TUBING . . .** Record first quarter housing starts are hurrying along demand for merchant pipe in most markets. Demand for oil country goods is picking up or at worst holding steady. Pickup in butt weld, seamless continues unabated. One Eastern producer reports seamless pipe is now into July. Smaller size butt weld is booked into middle of May and larger size pipe into third quarter. Delivery has been extended to 8-10 weeks on specialty items.

# Comparison of Prices

(Effective Apr. 26, 1955)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Apr. 26 1955	Apr. 19 1955	Mar. 29 1955	Apr. 27 1954
<b>Flat-Rolled Steel: (per pound)</b>				
Hot-rolled sheets	4.05¢	4.05¢	4.05¢	3.925¢
Cold-rolled sheets	4.95	4.95	4.95	4.775
Galvanized sheets (10 ga.)	5.45	5.45	5.45	5.275
Hot-rolled strip	4.05	4.05	4.05	3.925
Cold-rolled strip	5.79	5.79	5.79	5.515
Plate	4.225	4.225	4.225	4.10
Plates wrought iron	9.30	9.30	9.30	9.30
Stain's C-R strip (No. 302)	41.50	41.50	41.50	41.50

<b>Tin and Terplate: (per base box)</b>				
Tinplate (1.50 lb.) cokes	\$9.05	\$9.05	\$9.05	\$8.95
Tinplate, electro (0.50 lb.)	7.75	7.75	7.75	7.65
Special coated mfg. terms	7.85	7.85	7.85	7.75

<b>Bars and Shapes: (per pound)</b>				
Merchant bars	4.30¢	4.30¢	4.30¢	4.16¢
Cold-finished bars	5.40	5.40	5.40	5.29
Alloy bars	5.075	5.075	5.075	4.875
Structural shapes	4.25	4.25	4.25	4.10
Stainless bars (No. 302)	35.50	35.50	35.50	35.50
Wrought iron bars	10.40	10.40	10.40	10.40

<b>Wire: (per pound)</b>				
Bright wire	5.75¢	5.75¢	5.75¢	5.525¢

<b>Rails: (per 100 lb.)</b>				
Heavy rails	\$4.45	\$4.45	\$4.45	\$4.325
Light rails	5.35	5.35	5.35	5.20

<b>Semi-finished Steel: (per net ton)</b>				
Re-rolling billets	\$64.00	\$64.00	\$64.00	\$62.00
Slabs, re-rolling	64.00	64.00	64.00	62.00
Forging billets	78.00	78.00	78.00	75.50
Alloy blooms, billets, slabs	86.00	86.00	86.00	82.00

<b>Wire Rod and Skeip: (per pound)</b>				
Wire rods	4.675¢	4.675¢	4.675¢	4.525¢
Skeip	3.90	3.90	3.90	3.75

<b>Finished Steel Composite: (per pound)</b>				
Base price	4.797¢	4.797¢	4.797¢	4.634¢

## Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

## Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

## Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

	Apr. 26 1955	Apr. 19 1955	Mar. 29 1955	Apr. 27 1954
<b>Pig Iron: (per gross ton)</b>				
Foundry, del'd Phila.	\$61.19	\$61.19	\$61.19	\$61.19
Foundry, Valley	56.50	56.50	56.50	56.50
Foundry, Southern, Cin'ti	60.45	60.45	60.45	60.45
Foundry, Birmingham	52.88	52.88	52.88	52.88
Foundry, Chicago	56.50	56.50	56.50	56.50
Basic, del'd Philadelphia	60.27	60.27	60.27	60.27
Basic, Valley furnace	56.00	56.00	56.00	56.00
Malleable, Chicago	56.50	56.50	56.50	56.50
Malleable, Valley	56.50	56.50	56.50	56.50
Ferromanganese, cents per lb.	9.50¢	9.50¢	9.50¢	10.00¢
‡ 74-76 pct Mn base.				

<b>Pig Iron Composite: (per gross ton)</b>				
Pig iron	\$56.59	\$56.59	\$56.59	\$56.59

<b>Scrap: (per gross ton)</b>				
No. 1 steel, Pittsburgh	\$35.50	\$35.50	\$38.50	\$27.50
No. 1 steel, Phila. area	37.00	37.00	37.00	21.50
No. 1 steel, Chicago	34.50	35.50	35.50	29.50
No. 1 bundles, Detroit	29.00	29.00	29.50	18.00
Low phos. Youngstown	36.50	39.50	37.50	31.50
No. 1 mach'y cast, Pittsburgh	43.50	43.50	43.50	42.50
No. 1 mach'y cast, Philadelfa.	44.50	44.50	44.50	39.50
No. 1 mach'y cast, Chicago	47.00	47.00	46.50	41.00

<b>Steel Scrap Composite: (per gross ton)</b>				
No. 1 heavy melting scrap	\$35.67	\$36.00	\$37.00	\$26.17

<b>Coke, Connellville: (per net ton at oven)</b>				
Furnace coke, prompt	\$13.00	\$13.00	\$14.58	\$14.38
Foundry coke, prompt	16.75	16.75	16.75	16.75

## Nonferrous Metals: (cents per pound to large buyers)

Copper, electrolytic, Conn.	36.00	36.00	36.00	30.00
Copper, Lake, Conn.	36.00	36.00	33.00	30.00
Tin, Straits, New York	91.50¢	92.125	91.25	97.00
Zinc, East St. Louis	12.00	12.00	11.50	10.25
Lead, St. Louis	14.80	14.80	14.80	13.80
Aluminum, virgin ingot	23.20	23.20	23.20	21.50
Nickel, electrolytic	67.67	67.67	67.67	63.08
Magnesium, ingot	29.25	29.25	29.25	27.75
Antimony, Laredo, Tex.	28.50	28.50	28.50	28.50

† Tentative. ‡ Average. \* Revised.

## PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

## STAINLESS STEEL

←To identify producers, see Key on P. 145→

Base price cents per lb. f.o.b. mill

Producing Plant	Basic	Fdry.	Mall.	Basic	Low Phos.
Bethlehem B1	58.00	58.50	59.00	59.50	
Birmingham R3	52.38	52.88			
Birmingham W9	52.38	52.88			
Birmingham U4	52.38	52.88	56.50		
Buffalo R3	56.00	56.50	57.00		
Buffalo I11	56.00	56.50	57.00		
Buffalo W6	56.00	56.50	57.00		
Chicago I4	56.00	56.50	57.00	57.00	
Cleveland A5	56.00	56.50	56.50	57.00	61.00
Cleveland R3	56.00	56.50	56.50		
Dangerfield L3	52.50	52.50	52.50		
Duluth I4	56.00	56.50	56.50	57.00	
Erie I4	56.00	56.50	56.50	57.00	
Everett M6		61.00	61.50		
Fontana K1	62.00	62.50			
Geneva, Utah C7	56.00	56.50			
Granite City G2	57.90	58.40	58.90		
Hubbard V1			56.50		
Minnequa C6	58.00	59.00	59.00		
Monessen P6	56.00				
Neville Isl. P4	56.00	56.50	56.50		
N. Tonawanda T1		56.50	57.00		
Pittsburgh U1	56.00			57.00	
Sharpville S1	56.00	56.50	56.50	57.00	
Sa. Chicago R3	56.00	56.50	56.50		
Steelton B3	58.00	58.50	59.00	59.50	64.00
Swedeland A2	58.00	58.50	59.00	59.50	
Toledo I6	56.00	56.50	56.50	57.00	
Troy, N. Y. R3	58.00	58.50	59.00	59.50	64.00
Youngstown Y1			56.50	57.00	

**DIFFERENTIALS:** Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct); 50¢ per ton for each 0.50 pct manganese over 1 pct; 50¢ per ton for 0.5 to 0.75 pct nickel; \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus content 0.70 and over.

**Silvery Iron:** Buffalo, H1, \$64.25; Jackson, J1, G1, \$45.00. Add \$1.00 per ton for each 0.50 pct silicon over base (\$0.1 to 0.50 pct) up to 17 pct. Add \$1 per ton for 0.75 pct or more phosphorus. Add 75¢ for each 0.50 pct manganese over 1.0 pct. Bessemer iron-silicon prices are \$1 over comparable silvery iron.

Product	301	302	303	304	316	321	347 Cb	410	416	430
Ingot, re-rolling	16.75	17.75	19.25	19.00	29.75	23.50	35.50	14.00	—	14.25
Slabs, billets, re-rolling	21.00	23.25	25.25	24.50	38.00	30.25	46.75	18.25	—	18.5
Forg. discs, die blocks, rings	39.00	39.00	42.00	41.25	61.75	46.25	—	31.00	31.75	41.7
Billets, forging	30.00	30.25	32.75	31.75	48.25	36.00	54.75	24.00	24.50	24.5
Bars, wires, structurals	35.75	36.00	38.75	38.00	57.25	42.75	64.25	28.75	29.25	29.2
Plates	37.75	38.00	40.25	40.50	60.50	46.50	69.25	30.00	30.50	30.5
Sheets	41.75	42.00	49.25	44.50	64.50	51.25	77.50	34.25	41.25	34.7
Strip, hot-rolled	39.25	32.50	37.25	35.00	55.00	41.75	63.00	26.25	—	27.0
Strip, cold-rolled	38.75	42.00	46.00	44.50	64.50	51.25	77.50	34.25	41.25	34.75
					64.75	51.50				

## STAINLESS STEEL PRODUCING PLANTS:

**Sheets:** Midland, Pa., C11; Brockbridge, Pa., A3; Butler, Pa., A7; McKeesport, Pa., U1; Washington, Pa., W2, J2; Baltimore, Md., I1; Middletown, O., A7; Massillon, O., R3; Gary, Ind., U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Ft. Wayne, Ind., J4; Philadelphia, Pa., D5.

**Strip:** Midland, Pa., C11; Cleveland, Ind., A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leeburg, Pa., A3; Bridgeville, Pa., U2; Detroit, Mich., M2; Canton-Massillon, O., R3; Middletown, O., A7; Harrison, N. J., D3; Youngstown, Pa., S3; Sharon, Pa., S1; Butler, Pa., A7; Wallingford, Conn., U3 (25¢ per lb. higher); W1 (25¢ per lb. higher); New Bedford, Mass., R6.

**Bar:** Baltimore, Md., A7; Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1; F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; Chicago, Ill., J4; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, Ind., A5; Canton, O., T5; Ft. Wayne, Ind., J4; Philadelphia, Pa., D5.

**Wire:** Waukegan, Ind., A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, Ind., J4; Harrison, N. J., D3; Baltimore, Md., A7; Dunkirk, N. Y., A3; Monessen, Pa., P1; Syracuse, N. Y., C11; Bridgeville, Pa., U2.

**Structurals:** Baltimore, Md., A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, N. Y., C11.

**Plates:** Brockbridge, Pa., A3; Chicago, Ill., U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Middletown, O., A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15; Philadelphia, Pa., D5.

**Forged discs, die blocks, rings:** Pittsburgh, Pa., C11; Syracuse, N. Y., C11; Ferndale, Mich., A3; Washington, Pa., J2.

**Forgings billets:** Midland, Pa., C11; Baltimore, Md., A7; Washington, Pa., J2; McKeesport, Pa., F1; Massillon, Canton, O., R3; Watervliet, N. Y., A3; Pittsburgh, Chicago, Ill., U1; Syracuse, N. Y., C11.

## Market Fails to Rebound

**Pittsburgh and Philadelphia prices for No. 1 hold firm . . . Chicago shows weakness in steelmaking grades, heavy foundry activity . . . Composite drops 33¢.**

◆ **PRICES** steadied somewhat after last week's losses but the market was still in a fluid condition. New York and Philadelphia prices for best steelmaking grades held firm. Chicago price for No. 1 heavy melting dropped again.

Chicago weakness was confined to steelmaking grades which were off \$1 and may slip further. There was strong foundry buying in the area. Water shipment for export is a hot topic in the district with at least 30,000 tons of steelmaking scrap being sought for shipment through the Great Lakes to foreign mills. However, little has been done in this direction and the movement is not expected to have much effect in tightening the domestic market. Most dealers refuse to move scrap for export at less than \$2 over local domestic prices.

As a result of Chicago losses, **THE IRON AGE Heavy Melting Steel Scrap Composite** was off again for the second week in a row, dropping to \$35.67.

**Pittsburgh . . .** A purchase of a large tonnage by an independent mill confirmed current prices of No. 1 and No. 2 heavy melting. Price paid for No. 2 bundles was \$30 but with the stipulation that it carry a minimum \$3 freight. No. 2 local price held unchanged. Some brokers reportedly are having trouble filling latest orders for No. 1 and No. 2 heavy melting at going prices. Blast furnace grades weakened 50¢ on the basis of the latest purchase by a large consumer.

**Chicago . . .** In a week marked by strong foundry buying, steelmaking grades continued to slip, with new prices announced at \$1 lower for industrial grades by a large consumer,

and pegged by purchases of smaller mills. Though dealer prices are continuing to hold at the new market level, there is some indication that a further slip would occur later in the week at the broker buying level, should new mill buying fail to materialize. Thus far, any weakness is confined to steelmaking grades, particularly bundles. Electric furnace and railroad along with cast scrap continue to show strength. A few rail grades and some cast are very strong at present prices with broker buying again advancing. No. 1 factory bundles were printed incorrectly last week as \$35-36. Correct price listing should have been \$37-38.

**Philadelphia . . .** No. 1 heavy melting price remains at \$37.50 tops. While the market is generally holding steady, some grades softened and others strengthened slightly. On the basis of latest small quantity purchases by one district mill, price of No. 2 heavy melting is down \$1 on the bottom side resulting in a \$2 spread in this grade. Blast furnace grades are down 50¢.

**New York . . .** Domestic activity remained slack in New York as the big mills stayed out of the market. Major buying was expected to start within a week or 10 days. Export continues strong. With this source claiming a good-sized portion of the area's scrap, dealers look for prices to hold despite losses in other districts.

**Detroit . . .** Softness in the scrap market is continuing here. No major buys were reported this week. Automotive lists will be out this week and both dealers and brokers expect them to be down as much as \$1.50. This is part of the reason scrap is not moving. The mills also have big inventories and with steel production up, home scrap is running at a high rate. In addition they are using more blast furnace material. Price of low phos incorrectly printed at \$32-\$33 last week. Price should have been listed at \$30-31.

**Cleveland . . .** Market in Cleveland and Valley dropped \$2 this week with firm offerings by brokers. Despite record-high output of steel, mills are using heavy percentage of hot metal and leading producer still has a good inventory of open hearth scrap. Blast furnace grades are showing some weakening. In Valley, market also is stagnant and dealers are offering No. 1 grades at \$35 with no takers. One of the smaller electric furnace users paid \$36 for low phos. punchings, plate, but preponderance of grade was moving at \$35, survey of the market showed.

**Birmingham . . .** Prices held firm in this area. Evidence of strong steel demand came in the re-opening of the pipe mill of a major producer in the area.

**St. Louis . . .** The market for scrap in the St. Louis industrial district continues steady with prices unchanged. Recent declines in other markets have not been reflected here since this market did not follow in the advances that preceded. As one broker put it, "We are just minding our own business." No new commitments are expected to be made before May 15.

**Cincinnati . . .** Brokers this week were awaiting announcement of new prices for area's major buyer, expected to be \$1 lower than last sale. Price outlook remains poor throughout area but several mills indicated willingness to buy at a price, trade sources report.

**Buffalo . . .** Scrap market in Buffalo continues quiet. There were no price changes and no new business is expected until placement of May orders. Steel operations continue at a high rate but there is no change in the scrap picture.

**Boston . . .** Export demand is off sharply and the slackness of the domestic market continues. Prices of No. 2 heavy melting, mixed borings and turnings, and shoveling turnings were off \$1. No. 2 bundles joined unstripped motor blocks and chemical borings as nominal price items, showing virtually no activity in what was a generally quiet market.

**West Coast . . .** West Coast scrap market steady. Export business highlights activity in San Francisco Bay Area and Los Angeles. Some mills say no price changes expected for a while.



A  
SYMBOL  
OF  
LEADERSHIP  
IN  
IRON & STEEL  
SCRAP  
SINCE  
1889



# *Luria Brothers and Company, Inc.*

MAIN OFFICE  
**LINCOLN-LIBERTY BLDG.**

Philadelphia 7, Penna.

## PLANTS

LEBANON, PENNA.	DETROIT (ECORSE),
READING, PENNA.	M I C H I G A N
MODENA, PENNA.	PITTSBURGH, PENNA.
	ERIE, PENNA.

## OFFICES

BIRMINGHAM, ALA.	DETROIT, MICHIGAN	PITTSBURGH, PENNA.
BOSTON, MASS.	HOUSTON, TEXAS	PUEBLO, COLORADO
BUFFALO, N. Y.	LEBANON, PENNA.	READING, PENNA.
CHICAGO, ILLINOIS	LOS ANGELES, CAL.	ST. LOUIS, MO.
CLEVELAND, OHIO	NEW YORK, N. Y.	SAN FRANCISCO, CAL.
	SEATTLE, WASH.	

EXPORTS-IMPORTS—LIVINGSTON & SOUTHARD, INC., 99 Park Avenue, New York, N. Y. Cable Address: FORENTRACO

April 28, 1955

# Scrap Prices (Effective Apr. 26, 1955)

## Pittsburgh

No. 1 hvy. melting	\$25.00 to \$26.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 bundles	35.00 to 36.00
No. 2 bundles	27.00 to 28.00
Machine shop turn.	20.50 to 21.50
Mixed bor. and turn.	20.50 to 21.50
Shoveling turnings	24.50 to 25.50
Cast iron borings	24.50 to 25.50
Low phos. punch'g, plate	40.00 to 41.00
Heavy turnings	32.00 to 34.00
No. 1 RR. hvy. melting	40.00 to 41.00
Scrap rails, random lgth.	45.00 to 46.00
Rails 2 ft and under	50.00 to 51.00
RR. steel wheels	44.50 to 45.50
RR. spring steel	44.50 to 45.50
RR. couplers and knuckles	44.50 to 45.50
No. 1 machinery cast.	42.00 to 44.00
Cupola cast.	39.00 to 40.00
Heavy breakable cast.	34.00 to 35.00

## Chicago

No. 1 hvy. melting	\$34.00 to \$35.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 factory bundles	36.00 to 37.00
No. 1 dealers' bundles	34.00 to 35.00
No. 2 dealers' bundles	24.00 to 25.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	18.00 to 20.00
Shoveling turnings	18.00 to 20.00
Cast iron borings	19.00 to 20.00
Low phos. forge crops	41.00 to 42.00
Low phos. punch'g, plate	38.00 to 39.00
Low phos. 3 ft and under	37.00 to 38.00
No. 1 RR. hvy. melting	38.00 to 39.00
Scrap rails, random lgth.	42.00 to 43.00
Rolling rails	52.00 to 53.00
Rails 2 ft and under	50.00 to 51.00
Locomotive tires, cut	37.00 to 38.00
Cut bolsters & side frames	28.00 to 40.00
Angles and splice bars	44.00 to 45.00
RR. steel car axles	42.00 to 43.00
RR. couplers and knuckles	40.00 to 41.00
No. 1 machinery cast.	46.00 to 48.00
Cupola cast.	42.00 to 43.00
Heavy breakable cast.	33.00 to 35.00
Cast iron brake shoes	34.00 to 35.00
Cast iron car wheels	37.00 to 38.00
Malleable	45.00 to 46.00
Stove plate	26.00 to 27.00

## Philadelphia Area

No. 1 hvy. melting	\$26.50 to \$27.50
No. 2 hvy. melting	32.00 to 34.00
No. 1 bundles	26.50 to 27.50
No. 2 bundles	27.00 to 28.00
Machine shop turn.	21.00 to 22.00
Mixed bor. short turn.	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Shoveling turnings	24.00 to 25.00
Clean cast chem. borings	25.00 to 26.00
Low phos. 5 ft and under	40.00 to 41.00
Low phos. 3 ft and under	41.00 to 42.00
Low phos. punch'g	41.00 to 42.00
Elec. furnace bundles	39.00 to 40.00
Heavy turnings	34.00 to 36.00
RR. steel wheels	41.50 to 42.50
RR. spring steel	41.50 to 42.50
Rails 18 in. and under	51.00 to 53.00
Cupola cast.	36.00 to 38.00
Heavy breakable cast.	40.00 to 41.00
Cast iron car wheels	44.00 to 45.00
Malleable	44.00 to 45.00
Unstripped motor blocks	27.00 to 28.00
No. 1 machinery cast.	44.00 to 45.00
Charging box cast.	37.00 to 38.00

## Cleveland

No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 bundles	23.00 to 24.00
No. 2 bundles	27.00 to 28.00
No. 1 busheling	33.00 to 34.00
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	24.00 to 25.00
Cut struct'l & plates, 3 ft & under	41.00 to 42.00
Drop forge flashings	33.00 to 34.00
Low phos. punch'g, plate	34.00 to 35.00
Foundry steel, 2 ft & under	40.50 to 41.50
No. 1 RR. heavy melting	36.00 to 37.00
Rails 2 ft and under	49.00 to 50.00
Rails 18 in. and under	50.00 to 51.00
Railroad grate bars	37.00 to 38.00
Steel axle turnings	37.00 to 38.00
Railroad cast.	45.00 to 46.00
No. 1 machinery cast.	45.00 to 46.00
Stove plate	43.00 to 44.00
Malleable	45.00 to 46.00

## Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

## Youngstown

No. 1 hvy. melting	\$25.00 to \$26.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 bundles	35.00 to 36.00
No. 2 bundles	26.00 to 27.00
Machine shop turn.	19.00 to 20.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	25.00 to 26.00
Low phos. plate	36.00 to 37.00

## Buffalo

No. 1 hvy. melting	\$31.00 to \$32.00
No. 2 hvy. melting	37.50 to 28.50
No. 1 busheling	31.00 to 32.00
No. 1 bundles	31.00 to 32.00
No. 2 bundles	25.50 to 26.50
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	20.50 to 21.50
Shoveling turnings	31.50 to 22.50
Cast iron borings	20.50 to 21.50
Low phos. plate	34.00 to 35.00
Scrap rails, random lgth.	35.00 to 24.00
Rails 2 ft and under	42.00 to 43.00
RR. steel wheels	36.00 to 37.00
RR. spring steel	36.00 to 37.00
RR. couplers and knuckles	36.00 to 37.00
No. 1 machinery cast.	41.00 to 42.00
No. 1 cupola cast.	36.00 to 37.00

## Detroit

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$28.50 to \$29.50
No. 2 hvy. melting	23.00 to 24.00
No. 1 bundles, openhearth	28.50 to 25.50
No. 2 bundles	19.00 to 20.00
New busheling	28.00 to 29.00
Drop forge flashings	27.00 to 28.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	15.50 to 16.50
Shoveling turnings	16.50 to 17.50
Cast iron borings	16.50 to 17.50
Low phos. punch'g, plate	30.00 to 31.00
No. 1 cupola cast.	36.00 to 38.00
Heavy breakable cast.	27.00 to 28.00
Stove plate	32.00 to 33.00
Automotive cast.	40.00 to 42.50

## St. Louis

No. 1 hvy. melting	\$31.00 to \$32.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 bundles	31.00 to 32.00
No. 2 bundles	24.50 to 25.50
Machine shop turn.	16.00 to 17.00
Cast iron borings	17.50 to 18.50
Shoveling turnings	37.00 to 38.00
No. 1 RR. hvy. melting	37.00 to 38.00
Rails, random lengths	41.00 to 42.00
Rails, 18 in. and under	48.00 to 49.00
Locomotive, tires uncut	36.50 to 37.50
Angles and splice bars	36.50 to 37.50
Std. steel car axles	36.00 to 37.00
RR. spring steel	37.00 to 38.00
Cupola cast.	42.00 to 43.00
Hvy. breakable cast.	34.00 to 35.00
Cast iron brake shoes	32.00 to 33.00
Stove plate	35.00 to 36.00
Cast iron car wheels	36.00 to 37.00
Malleable	36.00 to 37.00
Unstripped motor blocks	33.50 to 34.50

## Boston

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$26.00 to \$27.00
No. 2 hvy. melting	21.00 to 22.00
No. 1 bundles	28.00 to 27.00
No. 2 bundles	18.00 to 19.00
No. 1 busheling	26.00 to 27.00
Elec. furnace, 3 ft & under	31.00 to 32.00
Machine shop turn.	10.00 to 11.00
Mixed bor. and short turn.	13.00 to 14.00
Shoveling turnings	14.00 to 15.00
Clean cast chem. borings	16.00 to 17.00
No. 1 machinery cast.	31.00 to 32.00
Mixed cupola cast.	29.00 to 30.00
Heavy breakable cast.	27.00 to 28.00
Stove plate	27.00 to 28.00
Unstripped motor blocks	17.00 to 18.00

## New York

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$32.50
No. 2 hvy. melting	28.50
No. 2 bundles	\$24.00 to 25.00
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	12.00 to 13.00
Shoveling turnings	14.00 to 15.00
Clean cast chem. borings	22.00 to 23.00
No. 1 machinery cast.	37.00 to 39.00
Mixed yard cast.	31.00 to 32.00
Charging box cast.	31.00 to 32.00
Heavy breakable cast.	31.00 to 32.00
Unstripped motor blocks	22.00 to 23.00

## Birmingham

No. 1 hvy. melting	\$31.00 to \$32.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 bundles	31.00 to 32.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	32.00 to 33.00
Machine shop turn.	18.00 to 19.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	17.00 to 18.00
Electric furnace bundles	32.00 to 33.00
Bar crops and plate	36.00 to 37.00
Structural and plate, 2 ft.	36.00 to 37.00
No. 1 RR. hvy. melting	36.00 to 37.00
Scrap rails, random lgth.	39.00 to 40.00
Rails, 18 in. and under	44.00 to 45.00
Angles & splice bars	40.00 to 41.00
Rolling rails	43.00 to 44.00
No. 1 cupola cast.	45.00 to 46.00
Stove plate	42.00 to 43.00
Charging box cast.	22.00 to 23.00
Cast iron car wheels	33.00 to 34.00
Unstripped motor blocks	35.50 to 36.50
Mashed tin cans	15.00 to 16.00

## Cincinnati

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 bundles	33.00 to 34.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	20.00 to 21.00
Low phos. 18 in. & under	37.00 to 38.00
Rails, random lengths	41.00 to 42.00
Rails, 18 in. and under	47.00 to 48.00
No. 1 cupola cast.	29.00 to 40.00
Hvy. breakable cast.	34.00 to 35.00
Drop broken cast.	44.00 to 45.00

## San Francisco

No. 1 hvy. melting	\$27.00
No. 2 hvy. melting	25.00
No. 1 bundles	26.00
No. 2 bundles	22.00
No. 3 bundles	18.00
Machine shop turn.	8.00
Cast iron borings	9.00
No. 1 RR. hvy. melting	27.00
No. 1 cupola cast.	40.00

## Los Angeles

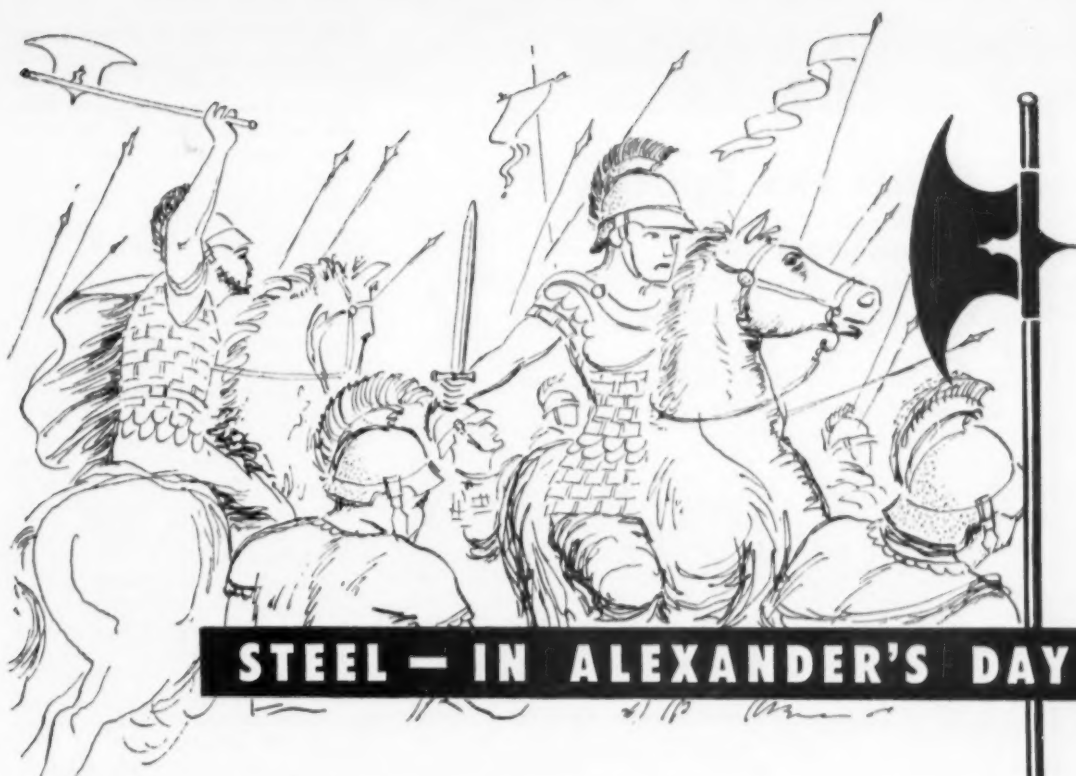
No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	28.00
No. 1 bundles	29.00
No. 2 bundles	23.00
No. 3 bundles	20.00
Machine shop turn.	8.00
Shoveling turnings	10.00
Cast iron borings	10.00
Elec. furn. 1 ft. and under	30.00
No. 1 RR. hvy. melting	30.00
No. 1 cupola cast.	\$41.00 to 42.00

## Seattle

No. 1 hvy. melting	\$33.00
No. 2 hvy. melting	29.00
No. 2 bundles	23.00
No. 3 bundles	19.00
No. 1 cupola cast.	35.00
Mixed yard cast.	35.00

## Hamilton, Ont.

No. 1 hvy. melting	\$24.00
No. 2 hvy. melting	21.00
No. 1 bundles	34.00
No. 2 bundles	28.00
Mixed steel scrap	28.00
Bushings	29.00
Bush., new fact prep'd	32.00
Bush., new fact unprep'd	28.00
Short steel turnings	\$16.00 to 17.00
Mixed bor. and turn.	16.00 to 17.00
Rails, rerolling	43.00
Cast scrap	42.00 to 45.00



## STEEL — IN ALEXANDER'S DAY

When the armies of Alexander the Great defeated the Persians at Arbela in 331 B.C., steel already had its specialized uses.

According to Daimachus, a writer of the fourth century B.C.,

Chalybdic and Synoptic steels were used for ordinary tools;

Lydian for swords, razors and surgical instruments;

Lacedaemonian for files, augers, chisels and stone-cutting implements.

Today, steel requirements for specialized purposes are far

more extensive—for implements and tools—for

agriculture, industry, construction, transportation and defense.

Scrap, in millions of tons, is required to maintain the continuity of our vitally important steel production.

*For the purchase or sale of iron or steel scrap...*

*phone or write "Your Chicago Broker"*

M. S.  
**KAPLAN**  
COMPANY

231 S. La Salle St., Chicago

Telephone ANDover 3-3900

# Copper Holds the Spotlight

**Britain's release of another 20,000 tons of government copper, peaceful settlement of labor dispute, keep attention focused on copper . . . Record aluminum output.**

♦ AGAIN it's copper that is creating most of the excitement in the nonferrous field. What focused industry attention on the metal throughout most of last week were: release of another 20,000 gross tons of government copper by the British Board of Trade; settlement of another touch-and-go labor situation in Chile without a strike, and release of copper consumption figures which showed that copper use in March was the highest for any month since World War II.

Perhaps reacting to general criticism from trade circles that it had acted too late and done too little to help remedy the copper shortage and to bring price of the metal down to a more reasonable level, the British Board of Trade last week released 20,000 tons of copper from the government stockpile. This is in addition to the 45,000 tons made available the previous week.

The new allotment was purchased by the Rhodesian Selection Trust, a group of copper producers. Since the metal was being held in U. K. warehouses it was available on request.

Because of the time required to convert the blister copper into refined shapes, the metal will probably not be available for consumption until the middle or latter part of July.

COPPER . . . Immediate market reaction to the British Board of Trade's move in freeing an additional 20,000 tons of copper from government stocks was a price drop of more than 1¢ per lb on the London Metal Exchange. The decline at the time was also affected by the improved outlook for peaceful settlement of a wage dispute at Anaconda's Andes Copper in Chile. Toward the end of the week, however, the market quieted down and at the close of the week copper had moved up slightly to a 40.31¢ per lb level for spot.

As it turned out, those who had anticipated that there would not be a strike at Anaconda's Potrerillos mine were right. News of the peaceful settlement of the labor dispute was received gratefully by uneasy copper users.

March was a banner month for copper. Statistics released by the Copper Institute show consumption of refined copper by U. S. wire and brass mills and foundries as indicated by shipments of fabricated products totaled 142,776 tons, 23,990 more than in February. The March figure was the highest for any single month since World War II.

March was also a good month for brass and bronze ingot makers. Defense Council of the Ingot Brass & Bronze Industry reports shipments during March amounted to 29,713 tons, a increase of 4400 tons over February, and the highest monthly shipment level since July 1951.

ALUMINUM . . . Insatiable demand for aluminum continues to keep pressure on this metal despite the all-time

production record the industry has been setting so far this year. Some in the industry had thought there would be a slump in aluminum demand about now, but so far there's no indication of any easing and likelihood is there won't be.

Reflecting the continued tight supply situation, Aluminum Smelters Industry Advisory Committee, in a meeting with Business & Defense Service officials, recommended that the government restrict exports of aluminum scrap in the third quarter to not more than 500 tons a month. Under present quota arrangements, scrap exports of up to 9000 tons are permitted during the second quarter, or an average of 3000 tons per month. The industry feels that if this rate of export is continued into the third quarter the aluminum scarcity could become really severe.

March saw continuation of the primary aluminum industry's record breaking production pace as producers head steadily toward an all-time output high of more than 1.5 million tons. Here's the breakdown on production figures as reported by the Aluminum Assn.:

Output of primary aluminum in March totaled 130,277 tons—a new record for a single month.

Total production during the first quarter amounted to 374,711 tons—a new record for output in any quarter.

The primary aluminum production pace is currently running better than 7 pct ahead of same time a year ago, and with a considerable slug of new capacity due to come in a few months, there is little that can stop the industry from setting a new production record—except of course a severe drought.

ZINC . . . Terrific production pace being set by the diecasting industry is keeping stiff pressure on Special High Grade zinc. Situation is such that some producers have been forced to turn down orders for early May shipment. Supply of Prime Western continues to be plentiful.

LEAD . . . Consumption of lead during February was 8 pct below January. The decline was due entirely to the shortness of the month, as average daily rate of use in February hit 3071 tons compared with 3000 in January. Total consumption in February amounted to 84,700 tons, the lowest figure for any month since July, 1954.

Demand for lead, however, is good. For the week ended April 20, sales amounted to 16,000 tons which is considerably above what the trade regards as average volume.

## Daily Nonferrous Metal Prices

(Cents per lb except as noted)

	Apr. 20	Apr. 21	Apr. 22	Apr. 23	Apr. 25	Apr. 26
Copper, electro, Conn.	36.00	36.00	36.00	36.00	36.00	36.00
Copper, Lake, delivered	36.00	36.00	36.00	36.00	36.00	36.00
Tin, Straits, New York	91.75	91.50	91.625		91.50	91.50*
Zinc, East St. Louis	12.00	12.00	12.00	12.00	12.00	12.00
Lead, St. Louis	14.80	14.80	12.00	14.80	14.80	14.80

Note: Quotations are going prices

\*Tentative



# Nonferrous Prices (Effective Apr. 26, 1955)

## MILL PRODUCTS

(Cents per lb, unless otherwise noted)

### Aluminum

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Alloy	Flat Sheet		Plate	
	0.032 in.	0.081 in.	0.136 in.	0.250 in.
1100, 3003.....	39.1	37.1	35.9	35.5
3004.....	44.0	39.8	38.1	37.6
5052.....	45.7	41.9	40.2	39.3
3024-O, OAL.....	49.4	40.8	39.3	39.4
7075-O, OAL.....	60.8	49.1	46.8	46.8

Extruded Solid Shapes: Shape factors 1 to 4 88.7¢ to 86.7¢; 12 to 14, 39.4¢ to \$1.04; 24 to 26, 42.2¢ to \$1.35; 36 to 38, 49.8¢ to \$1.97. Rod, Round: Rolled, 1.064-4.5 in. 1100-F, 48.6¢ to 40.1¢; cold finished, 0.375-3.499 in., 1100-F, 47.9¢ to 42.4¢.

Screen Machine Stock: Rounds, 2011-T3, 3/16-1/2 in., 62.5¢ to 50.1¢; 3/8-1 1/2 in., 49.9¢ to 46.9¢; 1 3/8-3 in., 45.7¢ to 42.7¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051-0.374 in., 1100, 47.1¢ to 35.8¢; 5052, 56.7¢ to 44.4¢; 2017-T4, 74.3¢ to 44.7¢; 6061-T4, 59.5¢ to 44.1¢.

Extruded Tubing: Rounds, 6063-T5, OD 1 1/2-2 in., 44.4¢ to 64.8¢; 2-4 in., 40.3¢ to 54.6¢; 4-6 in., 40.8¢ to 49.8¢; 6-9 in., 41.4¢ to 52.1¢.

Roasting Sheet: Flat, per sheet, 0.032 in., 42 1/2¢; 60-in., \$2.998; 96-in., \$4.801; 120-in., \$6.002; 144-in., \$7.202. Coiled sheet, per lb., 0.019 in. x 28 in., 30.9¢.

### Magnesium

(F.o.b. mill, freight allowed)

Sheet & Plate: FSI-O 1/4 in., 59¢; 3/16 in., 60¢; 1/2 in., 59¢; 0.064 in., 76¢; 0.032 in., 97¢. Specification grade higher. Base 30,000 lb.

Extruded Round Rod: M, diam 1/4 to 0.311 in., 79¢; 1/2 to 1/4 in., 62.5¢; 1 1/4 to 1.749 in., 59¢; 2 1/2 to 5 in., 54.5¢. Other alloys higher. Base up to 1/4 in. diam, 10,000 lb; 1/2 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes: Rectangles: M. In weight per ft for perimeters less than size indicated: 0.10 to 0.11 lb, 5.5 in., 67.3¢; 0.22 to 0.25 lb, 5.9 in., 64.3¢; 0.60 to 0.59 lb, 8.6 in., 61.7¢; 1.8 to 2.59 lb, 19.5 in., 59.5¢; 4 to 6 lb, 28 in., 55¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/2 lb, 10,000 lb; 1/2 to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness; OD 1/4 to 5/16 in., \$1.46; 5/16 to 1 in., \$1.32; 1 1/4 to 1 1/2 in., \$1.40; 1 3/4 to 2 in., \$2.00; 2 1/4 to 2 1/2 in., \$2.10; 3 to 4 in., \$2.40. Other alloys higher. Base, OD: Up to 1 1/2 in., 10,000 lb; 1 1/2 to 3 in., 20,000 lb; over 3 in., 30,000 lb.

### Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$9; Forgings, \$9.

### Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel Monel	Inconel
Sheet, CR.....	102	78
Strip, CR.....	102	87
Rod, Bar, HR.....	87	69
Angles, HR.....	87	69
Plate, HR.....	97	82
Seamless Tube.....	122	108
Shot, Blocks.....		85

### Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Shapes
Copper.....	52.79	51.11	54.86
Copper, h-r.....	54.76	52.36	
Copper, drawn.....	49.75	49.69	
Low brass.....	46.27	46.21	
Red brass.....	50.99	50.93	
Naval brass.....		44.30	45.64
Lead brass.....			43.09
Com. bronze.....	52.78	52.72	
Mang. bronze.....	53.73	47.83	49.39
Phos. bronze.....	73.03	73.53	
Muntz metal.....	48.14	43.95	45.20
Ni silver, 10 pct.....	60.20	63.28	66.34
Beryllium copper, CR, 1.9% Be, Base 2000 lb, f.o.b.....			
Strip.....			\$1.74
Rod, bar, wire.....			1.71

## PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed.....	33.20
Aluminum pig.....	21.50
Antimony, American, Laredo, Tex.....	28.50
Beryllium copper, per lb cont'd Be.....	\$40.00
Beryllium aluminum 5% Be, Dollars per lb contained Be.....	\$72.25
Blamuth, ton lots.....	\$2.25
Cadmium, del'd.....	\$1.70
Cobalt, 97-99% (per lb).....	\$2.60 to \$2.67
Copper, electro, Conn. Valley.....	36.00
Copper, Lake, delivered.....	36.00
Gold, U. S. Treas., per troy oz.....	\$35.00
Indium, 99.8%, dollars per troy oz.....	\$2.25
Iridium, dollars per troy oz.....	\$90 to \$100
Lead, St. Louis.....	14.80
Lead, New York.....	15.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb, pig.....	28.50
Ingots.....	29.25
Magnesium, sticks, 100 to 500 lb.....	49.00
Mercury, dollars per 76-lb flask, f.o.b. New York.....	\$315 to \$318
Nickel electro, f.o.b. N. Y. warehouse.....	67.67
Nickel oxide sinter, at Copper Cliff, Ont., contained nickel.....	60.75
Palladium, dollars per troy oz.....	\$18 to \$20
Platinum, dollars per troy oz.....	\$76 to \$79
Silver, New York, cents per troy oz.....	87.00
Tin, New York.....	91.50
Titanium, sponge, grade A-1.....	\$3.95
Zinc, East St. Louis.....	12.00
Zinc, New York.....	12.50
Zirconium copper, 50 pct.....	\$6.20

## REMELTED METALS

### Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot.....	37.00
No. 115.....	36.50
No. 120.....	36.50
No. 123.....	36.00
80-10-10 ingot.....	
No. 305.....	41.00
No. 315.....	38.75
88-10-2 ingot.....	
No. 210.....	50.75
No. 215.....	47.25
No. 245.....	42.25
Yellow ingot.....	
No. 405.....	32.25
Manganese bronze.....	
No. 421.....	34.75

### Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys.....	30.50-31.00
0.30 copper, max.....	30.25-30.75
0.60 copper, max.....	29.00-30.00
Piston alloys (No. 122 type).....	28.25-29.50
No. 12 aluminum (No. 2 grade).....	28.50-30.00
108 alloy.....	30.00-31.50
195 alloy.....	30.25-30.75
13 alloy (0.60 copper max.).....	28.50-30.00
ASX-679.....	

### Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97 1/2%.....	29.50-31.00
Grade 2—92-95%.....	29.00-30.50
Grade 3—90-92%.....	28.00-29.50
Grade 4—85-90%.....	27.00-28.50

## ELECTROPLATING SUPPLIES

### Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper.....	
Cast, oval, 15 in. or longer.....	44.92
Electrodeposited.....	39.78
Flat rolled.....	45.42
Brass, 80-20.....	
Cast, oval, 15 in. or longer.....	43.515
Zinc, flat cast.....	20.25
Ball, anodes.....	18.50
Nickel, 99 pct plus.....	
Cast.....	90.50*
Cadmium.....	\$1.70
Silver 999 fine, rolled, 100 oz. lots per troy oz., f.o.b. Bridgeport, Conn.....	94 1/2

### Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum.....	63.00
Copper sulphate, 99.5 crystals, bbl.....	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed.....	31.25*
Nickel chloride, 300 to 400 lb.....	43.50*
Silver cyanide, 100 oz. lots, per oz.....	75 1/2
Sodium cyanide, 96 pct domestic 200 lb drums.....	19.25
Zinc cyanide, 100 lb drum.....	\$4.50

\*Effective Jan. 3.

## SCRAP METALS

### Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper.....	32	31 1/2
Yellow brass.....	23 1/2	22
Red brass.....	23 1/2	22
Comm. bronze.....	29 1/2	28 1/2
Mang. bronze.....	22 1/6	21 1/2
Yellow brass rod ends.....	23 1/2	22

### Custom Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire.....	34 1/2
No. 2 copper wire.....	33
Light copper.....	31 1/2
*Refinery brass.....	30 1/2

\*Dry copper content.

### Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire.....	33	33 1/2
No. 2 copper wire.....	31 1/2	32
Light copper.....	29 1/2	29 1/2
No. 1 composition.....	28	27 1/2
No. 1 comp. turnings.....	27 1/2	27 1/2
Roller brass.....	21 1/2	21 1/2
Brass pipe.....	21	21
Radiators.....	21 1/2	21 1/2

### Aluminum

Mixed old cast.....	18	19
Mixed new clips.....	18	20
Mixed turnings, dry.....	17 1/2	19

### Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

### Copper and Brass

No. 1 heavy copper and wire.....	30 1/2	31 1/2
No. 2 heavy copper and wire.....	29 1/2	30
Light copper.....	27 1/2	28
New type shell cuttings.....	19	19 1/2
Auto radiators (unsweated).....	27	27 1/2
No. 1 composition.....	26	26 1/2
No. 1 composition turnings.....	25	25 1/2
Unlined red car boxes.....	19	19 1/2
Cocks and faucets.....	21 1/2	22
Mixed heavy yellow brass.....	16 1/2	17
Old rolled brass.....	18	18 1/2
Brass pipe.....	21 1/2	22
New soft brass clippings.....	21 1/2	22
Brass rod ends.....	19	19
No. 1 brass rod turnings.....	19 1/2	20

### Aluminum

Alum. pistons and struts.....	14	14 1/2
Aluminum crankcases.....	15 1/2	16
1100 (28) aluminum clippings.....	18	18 1/2
Old sheet and utensils.....	14	14 1/2
Borings and turnings.....	9 1/2	10
Mixed cast aluminum.....	14	14 1/2
2024 (24s) clippings.....	15 1/2	16

### Zinc

New zinc clippings .....	7 1/2
Old zinc .....	5 1/2
Zinc routings .....	3 1/2 — 3 3/4
Old die cast scrap .....	3 1/4 — 2 1/2

### Nickel and Monel

Pure nickel clippings.....	57
Clean nickel turnings.....	40
Nickel anodes.....	57
Nickel rod ends.....	28
New Monel clippings.....	21
Clean Monel turnings.....	21
Old sheet Monel.....	16 1/2
Nickel silver clippings, mixed.....	13 1/2
Nickel silver turnings, mixed.....	13 1/2

### Lead

Soft scrap lead.....	11 1/2	11 1/2
Battery plates (dry).....	6 1/2	6 1/2
Batteries, acid free.....	4	4

### Magnesium

Segregated solids.....	18 1/2	19
Castings.....	17 1/2	18

### Miscellaneous

Block tin.....	75
No. 1 pewter.....	50 —55
No. 1 auto babbitt.....	40
Mixed common babbitt.....	12 —12 1/2
Solder joints.....	17 —17 1/2
Siphon tops.....	40
Small foundry type.....	16 1/2
Monotype.....	15
Lino. and stereotype.....	13 1/2 —14 1/2
Electrotype.....	12 —12 1/2
Hand picked type shells.....	9 1/2
Lino. and stereo. dross.....	6 1/2
Electro dross.....	6

## IRON AGE

STEEL  
PRICES(Effective  
Apr. 26, 1955)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PIL- ING	SHAPES STRUCTURALS			STRIP					
		Carbon Re-rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
EAST	Bethlehem, Pa.			\$86.00 B3		4.30 B3	6.45 B1	4.30 B3						
	Buffalo, N. Y.	\$64.00 B1	\$76.00 B3, R3	\$86.00 B3, R3	5.075 B3	4.30 B3	6.45 B3	4.30 B3	4.85 B3, R3	5.75 R7, S10	6.15 B3	8.425 B3		
	Claymont, Del.													
	Harrison, N. J.													12.45 C11
	Consolidated, Pa.								4.10 A2	5.80 A2	6.15 A2			
	New Bedford, Mass.									6.20 R6				
	Johnstown, Pa.	\$64.00 B3	\$76.00 B3	\$86.00 B3		4.30 B3	6.45 B3		4.85 B3					
	Fairless, Pa.													
	New Haven, Conn.									6.20 D1 6.50 A5				
	Phoenixville, Pa.					4.20 P2		4.30 P2						
	Sperrows Pt., Md.								4.05 B3	5.75 B3	6.15 B3	8.425 B3		
	Bridgeport, Wallingford, Conn.	\$69.00 N8	\$83.00 N8						4.35 N8	6.20 W1			7.80 N8	
	Pawtucket, R. I. Worcester, Mass.									6.30 N7 6.60 A5				12.75 A5 12.80 N7
MIDDLE WEST	Alton, Ill.								4.225 L1					
	Ashland, Ky.								4.05 A7					
	Canton-Massillon, Dover, Ohio		\$80.00 R3	\$86.00 R3, T3										12.45 G4
	Chicago, Ill.	\$64.00 U1	\$76.00 R3, U1, W8	\$86.00 U1, W8, R3	5.075 U1	4.25 U1, W8	6.40 U1, Y1	4.25 U1	4.05 A1, N4 W8	5.85 A1				
	Cleveland, Ohio									5.75 A5, J3		8.60 A5		12.45 A5
	Detroit, Mich.			\$86.00 B3					4.15 G3, M2	5.85 D1, D2, G3, M2, P11	6.25 G3	8.70 D2, G3		
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	\$64.00 U1	\$76.00 U1	\$86.00 U1, Y1	5.075 J3	4.25 J3, U1	6.40 U1, J3		4.05 J3, U1, Y1	5.85 J3	6.15 U1, J3, Y1	8.60 Y1	6.70 U1, Y1	
	Sterling, Ill.								4.15 N4					
	Indianapolis, Ind.									5.90 C5				
	Newport, Ky.												6.70 Y3	
	Middletown, Ohio									5.75 A7				
	Niles, Warren, Ohio Sharon, Pa.								4.05 S1, R3	5.75 S1, R3, T4	6.15 S1, R3	8.60 S1, R3	6.70 S1	12.45 S1
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	\$64.00 U1, J3	\$76.00 J3, U1, C11	\$86.00 U1, C11	5.075 U1	4.25 J3, U1	6.40 J3, U1	4.25 U1	4.05 P6	5.75 B4, J3, S7			6.70 S9	12.45 S9
	Portsmouth, Ohio								4.05 P7	5.75 P7				
	Weirton, Wheeling, Fallsdale, W. Va.					4.25 W3			4.05 W3	5.75 F3, W3	6.15 W3	8.60 W3		
	Youngstown, Ohio		\$78.00 C10	\$86.00 Y1, C10		4.25 Y1	6.40 Y1		4.05 U1, Y1	5.75 Y1, C5	6.15 U1, Y1	8.60 Y1	6.70 U1, Y1	12.45 C5
WEST	Fontana, Cal.	\$72.00 K1	\$86.00 K1	\$105.00 K1		4.90 K1	7.05 K1	5.25 K1	4.825 K1	7.50 K1	7.25 K1		8.10 K1	14.55 K1
	Geneva, Utah		\$78.00 C7			4.25 C7	6.40 C7							
	Kansas City, Mo.					4.30 S2	6.45 S2				6.40 S2		8.95 S2	
	Los Angeles, Torrance, Cal.		\$87.50 B2	\$106.00 B2		4.95 B2, C7	7.10 B2		4.80 B2, C7	7.80 C1				
	Minneapolis, Colo.					4.70 C6				5.15 C6				
	Portland, Ore.					5.00 O2								
	San Francisco, Niles, Pittsburgh, Cal.		\$87.50 B2			4.90 B2 4.95 P9	7.05 B2		4.80 B2, C7					
	Seattle, Wash.		\$91.50 B2			5.00 B2	7.15 B2		5.05 B2, P12					
	Atlanta, Ga.								4.25 A8					
SOUTH	Fairfield, Ala. City, Birmingham, Ala.	\$64.00 T2	\$78.00 T2			4.25 C16, R3, T2	6.40 T2		4.05 R3, T2C16		6.15 T2			
	Houston, Tex.		\$83.00 S2	\$91.00 S2		4.30 S2	6.45 S2				6.40 S2		8.95 S2	

IRON AGE		Italics identify producers listed in key at end of table. Basic prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.											
STEEL PRICES		SHEETS								WIRE ROD	TINPLATE†		BLACK PLATE
(Effective Apr. 30, 1955)		Hot-rolled 16 ga. & heavier	Cold-rolled	Galvanized 16 ga.	Enameling 12 ga.	Long Tensile 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled 19 ga.	Coke* 1.25-lb. base box	Electro* 9.25-lb. base box	Hollowware Enameling 29 ga.
EAST	Bethlehem, Pa.												
	Buffalo, N. Y.	4.95 B3	4.95 B3				6.10 B3	7.50 B3		4.875 W6	† Special coated milg. terms deduct 95¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 128 lb. deduct \$2.20 from 1.25-lb. coke base box. * COKE: 1.50-lb. add 25¢. ELECTRO: 9.50-lb. add 25¢; 9.75-lb. add 65¢; 1.00-lb. add \$1.10. Differential 1.00 lb./0.25 lb. add 85¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conschohocken, Pa.	4.10 A2	5.00 A2				6.15 A2						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									4.875 B3			
	Fairless, Pa.	4.10 U1	5.00 U1				6.15 U1	7.55 U1			\$8.90 U1	\$7.00 U1	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	4.95 B3	4.95 B3	5.45 B3			6.10 B3	7.50 B3	8.20 B3	4.775 B3	\$8.90 B3	\$7.60 B3	
MIDDLE WEST	Worcester, Mass.									4.975 A5			
	Trenton, N. J.												
	Alton, Ill.									4.85 L1			
	Ashland, Ky.	4.95 A7		5.45 A7	5.375 A7								
	Canton-Massillon, Dover, Ohio			5.45 R1, R3						5.175 R1			
	Chicago, Joliet, Ill.	4.95 A1, W8					6.10 U1			4.875 A5, N4, R3			
	Sterling, Ill.									4.775 N4			
	Cleveland, Ohio	4.95 J3, R3	4.95 J3, R3		5.375 R3		6.10 J3, R3	7.50 J3, R3		4.875 A5			
	Detroit, Mich.	4.15 G3, M2	5.05 G3				6.20 G3	7.60 G3					
	Newport, Ky.	4.95 N5	4.95 N5	5.45 N5									
	Gary, Ind. Harbor, Indiana	4.95 J3, U1, Y1	4.95 J3, U1, Y1	5.45 U1, J3	5.375 J3, U1	5.85 U1	6.10 U1, J3, Y1	7.50 U1, Y1		4.875 Y1	\$8.90 J3, U1, Y1	\$7.50 J3, U1, Y1	6.20 U1, Y1
WEST	Granite City, Ill.	4.25 G2	5.15 G2	5.85 G2	5.575 G2							\$7.60 G2	6.30 G2
	Kokomo, Ind.	4.15 C9		5.55 C9						5.20 C9	4.775 C9		
	Manassas, Ohio					5.85 E2				5.175 E2			
	Middletown, Ohio		4.95 A7		5.375 A7	5.85 A7							
	Niles, Warren, Ohio Sharon, Pa.	4.95 S1, R3 5.30 N3	4.95 R3 5.975 N3	5.45 N3, R3 5.975 N3	6.725 N3	5.85 N3	6.10 S1, R3	7.50 R3			\$8.90 R3	\$7.50 R3	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	4.95 J3, U1, P6	4.95 J3, U1, P6	5.45 U1	5.375 U1		6.10 J3, U1	7.50 J3, U1	8.20 U1	4.875 A5 4.875 P6	\$8.90 J3, U1	\$7.50 J3, U1	6.20 U1
	Portsmouth, Ohio	4.95 P7	4.95 P7							4.875 P7			
	Weirton, Wheeling, Follansbee, W. Va.	4.95 W3, W5	4.95 W3, W5, F3	5.45 W3, W5		5.85 W3, W5	6.10 W3	7.50 W3			\$8.90 W3, W5	\$7.50 W3, W5	6.20 F3, W5
	Youngstown, Ohio	4.95 U1, Y1	4.95 Y1		5.375 Y1		6.10 U1, Y1	7.50 Y1		4.875 Y1			
	Fontana, Cal.	4.825 K1	5.95 K1				6.875 K1	8.55 K1		5.475 K1			
	Geneva, Utah	4.15 C7											
SOUTH	Kansas City, Mo.									4.925 S2			
	Los Angeles, Torrance, Cal.									4.875 C7, B2			
	Minneapolis, Colo.									4.925 C6			
	San Francisco, Niles, Pittsburg, Cal.	4.75 C7	5.90 C7	6.20 C7						5.325 C7	\$9.55 C7	\$8.25 C7	
	Seattle, Wash.												
	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	4.95 R3, T2	4.95 T2	5.45 R3, T2			6.10 T2			5.35 R3	4.875 T2, R3	\$8.90 T2	\$7.60 T2
	Houston, Tex.									4.925 S2			

IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.										
STEEL PRICES (Effective Apr. 26, 1955)		BARS					PLATES				WIRE	
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Flat Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				5.875 B3	6.625 B3	6.45 B3					
	Buffalo, N. Y.	4.30 B3,R3	4.30 B3,R3	5.45 B5	5.875 B3,R3	6.625 B3,B5	6.45 B3	4.225 B3,R3			6.45 B3	5.75 W6
	Claymont, Del.							4.225 C4		5.90 C4		
	Coatesville, Pa.							4.225 L4		5.90 L4	6.45 L4	
	Conshohocken, Pa.							4.225 A2	5.275 A2		6.45 A2	
	Harrisburg, Pa.							4.225 C3	5.275 C3			
	Hartford, Conn.			5.90 R3		6.925 R3						
	Johnstown, Pa.	4.30 B3	4.30 B3		5.875 B3		6.45 B3	4.225 B3		5.90 B3	6.45 B3	5.75 B3
	Fairless, Pa.	4.45 U1	4.45 U1		5.225 U1							
	Newark, N. J.			5.85 W10		6.80 W10						
	Camden, N. J.			5.85 P10								
	Bridgeport, Putnam, Conn.	4.55 N8		5.95 W10	5.225 N8			4.475 N8				
	Sparrows Pt., Md.		4.30 B3					4.225 B3		5.90 B3	6.45 B3	5.85 B3
	Palmer, Worcester, Roadville, Mansfield, Mass.			5.85 W11 5.95 B5,C14		6.925 A5,B5						6.95 A5, W6
MIDDLE WEST	Alton, Ill.	4.50 L1										5.925 L1
	Ashland, Newport, Ky.							4.225 A7,N5		5.90 N5		
	Canton-Massillon, Mansfield, Ohio	4.40 R3		5.40 R2,R3	5.875 R3,T5	6.625 R2,R3,T5		4.225 E2				
	Chicago, Joliet, Ill.	4.30 U1, N4,W8,R3	4.30 N4,R3	5.40 A5,W10, W8,B5,L2	5.875 U1,R3, W8	6.625 A5,W8, W10,L2,B5		4.225 U1,W8, T3,A1,R3	5.275 U1	5.90 U1	6.45 U1	5.75 A5, R3,N4,W7
	Cleveland, Ohio	4.30 R3	4.30 R3	5.40 A5,C13		6.625 A5,C13	6.45 R3	4.225 J3,R3	5.275 J3		6.45 J3,R3	5.75 A5, C13
	Detroit, Mich.	4.40 G3 4.45 R5		5.40 R5 5.60 B5,P8 5.85 P3	5.875 R3 5.175 G3	6.625 R3 6.825 B5,P3 P8	6.55 G3	4.325 G3			6.55 G3	
	Duluth, Minn.											5.75 A5
	Gary, Ind. Harbor, Crawfordsville	4.30 J3,U1, Y1	4.30 J3,U1, Y1	5.40 M5,R3	5.875 J3,U1, Y1	6.625 M5, R3	6.45 U1,J3, Y1	4.225 J3, U1,Y1	5.275 J3	5.90 U1,Y1	6.45 U1,J3, Y1	5.85 M4
	Granite City, Ill.							4.425 G2				
	Kokomo, Ind.											5.85 C9
	Sterling, Ill.	4.40 N4	4.40 N4									5.85 N4
	Niles, Ohio Sharon, Pa.	4.30 R3					6.45 R3	4.225 S1,R3		5.90 S1	6.45 S1	
	Pittsburgh, Pa. Midland, Pa.	4.30 J3,U1, C11	4.30 J3,U1	5.40 A5,C8, C11,J3, W10,B4,R3	5.875 U1,C11	6.625 A5,C11, W10,C8,R3	6.45 J3,U1	4.225 J3,U1	5.275 U1	5.90 U1	6.45 J3,U1	5.75 A5,J3, P6
	Portsmouth, Ohio											5.75 P7
	Worren, Wheeling, Fallsdale, W. Va.	4.30 W3						4.225 W3, W3				
Youngstown, Ohio	4.30 U1,Y1, C10,R3	4.30 U1,Y1, R3	5.40 F2,Y1, C10	5.875 U1,Y1, C10	6.625 Y1,C10 6.645 F2	6.45 U1,Y1	4.225 U1,Y1, R3		5.90 Y1	6.45 Y1	5.75 Y1	
WEST	Emeryville, Cal.	5.05 J5	5.05 J5									
	Fontana, Cal.	5.00 K1	5.00 K1		6.125 K1		7.70 K1	4.875 K1		6.45 K1	7.15 K1	
	Geneva, Utah							4.225 C7			6.45 C7	
	Kansas City, Mo.	4.55 S2	4.55 S2		5.325 S2		6.70 S2					6.00 S2
	Los Angeles, Torrance, Cal.	5.00 B2,C7	5.00 B2,C7	6.85 R3	6.125 B2		7.15 B2					6.70 B2
	Minnequa, Colo.	4.75 C6	4.75 C6					5.975 C6				6.00 C6
	Portland, Ore.	5.05 O2	5.05 O2									
	San Francisco, Niles, Pittsburg, Cal.	5.00 C7,P9 5.85 B2	5.00 C7,P9 5.85 B2				7.20 B2					6.70 C7
	Seattle, Wash.	5.05 B2,P12, N6	5.05 B2,P12				7.20 B2	5.125 B2		6.70 B2	7.35 B2	
	SOUTH	Atlanta, Ga.	4.90 A8	4.90 A8								
Fairfield, Ala. City, Birmingham, Ala.		4.30 T2,C16, R3	4.30 T2,C16, R3				6.45 T2	4.225 T2,R3			6.45 T2	5.75 R3, T2
Houston, Ft. Worth, Lone Star, Tex.		4.55 S2	4.55 S2		5.325 S2		6.70 S2	4.55 L3 4.275 S2		5.85 S2	6.50 S2	6.00 S2



(Effective Apr. 26, 1955)

**Steel Prices****Key to Steel Producers**

With Principal Offices

A1 Acme Steel Co., Chicago  
 A2 Alan Wood Steel Co., Conshohocken, Pa.  
 A3 Allegheny Ludlum Steel Corp., Pittsburgh  
 A4 American Cladmetals Co., Carnegie, Pa.  
 A5 American Steel & Wire Div., Cleveland  
 A6 Angell Nail & Chaplet Co., Cleveland  
 A7 Armco Steel Corp., Middletown, O.  
 A8 Atlantic Steel Co., Atlanta, Ga.  
 B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.  
 B2 Bethlehem Pacific Coast Steel Corp., San Francisco  
 B3 Bethlehem Steel Co., Bethlehem, Pa.  
 B4 Blair Strip Steel Co., New Castle, Pa.  
 B5 Bliss & Laughlin, Inc., Harvey, Ill.

C1 Calstrip Steel Corp., Los Angeles  
 C2 Carpenter Steel Co., Reading, Pa.  
 C3 Central Iron & Steel Co., Harrisburg, Pa.  
 C4 Claymont Products Dept., Claymont, Del.  
 C5 Cold Metal Products Co., Youngstown, O.  
 C6 Colorado Fuel & Iron Corp., Denver  
 C7 Columbia Geneva Steel Div., San Francisco  
 C8 Columbia Steel & Shifting Co., Pittsburgh  
 C9 Continental Steel Corp., Kokomo, Ind.  
 C10 Copperweld Steel Co., Pittsburgh, Pa.  
 C11 Crucible Steel Co. of America, Pittsburgh  
 C12 Cumberland Steel Co., Cumberland, Md.  
 C13 Cuyahoga Steel & Wire Co., Cleveland  
 C14 Compressed Steel Shifting Co., Readville, Mass.  
 C15 G. O. Carlson, Inc., Thorndale, Pa.  
 C16 Connors Steel Div., Birmingham

D1 Detroit Steel Corp., Detroit  
 D2 Detroit Tube & Steel Div., Detroit  
 D3 Driver Harris Co., Harrison, N. J.  
 D4 Dickson Weatherproof Nail Co., Evanston, Ill.  
 D5 Henry Duxton & Sons, Inc., Philadelphia

E1 Eastern Stainless Steel Corp., Baltimore  
 E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.  
 F2 Fitzsimmons Steel Corp., Youngstown  
 F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Globe Iron Co., Jackson, O.

G2 Granite City Steel Co., Granite City, Ill.  
 G3 Great Lakes Steel Corp., Detroit  
 G4 Greer Steel Co., Dover, O.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago  
 I3 Inland Steel Co., Chicago  
 I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.  
 J2 Jessop Steel Corp., Washington, Pa.  
 J3 Jones & Laughlin Steel Corp., Pittsburgh  
 J4 Joslyn Mfg. & Supply Co., Chicago  
 J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.  
 K2 Keystone Steel & Wire Co., Peoria  
 K3 Koppers Co., Granite City, Ill.

L1 Lackde Steel Co., St. Louis  
 L2 La Salle Steel Co., Chicago  
 L3 Lone Star Steel Co., Dallas  
 L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.  
 M2 McLouth Steel Corp., Detroit  
 M3 Mercer Tube & Mfg. Co., Sharon, Pa.  
 M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.  
 M5 Monarch Steel Div., Hammond, Ind.  
 M6 Mystic Iron Works, Everett, Mass.

N1 National Supply Co., Pittsburgh  
 N2 National Tube Div., Pittsburgh  
 N3 Niles Rolling Mill Div., Niles, O.  
 N4 Northwestern Steel & Wire Co., Sterling, Ill.  
 N5 Newport Steel Corp., Newport, Ky.  
 N6 Northwest Steel Rolling Mills, Seattle  
 N7 Newman Crosby Steel Co., Pawtucket, R. I.  
 N8 Northeastern Steel Corp., Bridgeport, Conn.

O1 Oliver Iron & Steel Co., Pittsburgh  
 O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monaca, Pa.  
 P2 Phoenix Iron & Steel Co., Phoenixville, Pa.  
 P3 Pilgrim Drawn Steel Div., Plymouth, Mich.  
 P4 Pittsburgh Coke & Chemical Co., Pittsburgh  
 P5 Pittsburgh Screw & Bolt Co., Pittsburgh  
 P6 Pittsburgh Steel Co., Pittsburgh  
 P7 Portsmouth Div., Detroit Steel Corp., Detroit

P8 Plymouth Steel Co., Detroit  
 P9 Pacific States Steel Co., Niles, Cal.  
 P10 Precision Drawn Steel Co., Camden, N. J.  
 P11 Production Steel Strip Corp., Detroit  
 P12 Pacific Steel Rolling Mills, Seattle

R1 Reeves Steel & Mfg. Co., Dover, O.  
 R2 Reliance Div., Eaton Mfg. Co., Massillon, O.  
 R3 Republic Steel Corp., Cleveland  
 R4 Roebling Sons Co., John A., Trenton, N. J.  
 R5 Rotary Electric Steel Co., Detroit  
 R6 Rodney Metals, Inc., New Bedford, Mass.  
 R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.  
 S2 Sheffield Steel Corp., Kansas City  
 S3 Shenango Furnace Co., Pittsburgh  
 S4 Simonds Saw & Steel Co., Fitchburg, Mass.  
 S5 Sweet's Steel Co., Williamsport, Pa.  
 S6 Standard Forging Corp., Chicago  
 S7 Stanley Works, New Britain, Conn.  
 S8 Superior Drawn Steel Co., Monaca, Pa.  
 S9 Superior Steel Corp., Carnegie, Pa.  
 S10 Seneca Steel Service, Buffalo

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.  
 T2 Tennessee Coal & Iron Div., Fairfield  
 T3 Tennessee Products & Chem. Corp., Nashville  
 T4 Thomas Strip Div., Warren, O.  
 T5 Timken Steel & Tube Div., Canton, O.  
 T6 Tremont Nail Co., Wareham, Mass.  
 T7 Texas Steel Co., Fort Worth

U1 United States Steel Corp., Pittsburgh  
 U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.  
 U3 Ulbrich Stainless Steels, Wallingford, Conn.  
 U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.  
 W2 Washington Steel Corp., Washington, Pa.  
 W3 Weirton Steel Co., Weirton, W. Va.  
 W4 Wheeland Tube Co., Wheeland, W. Va.  
 W5 Wheeling Steel Corp., Wheeling, W. Va.  
 W6 Wickwire Spencer Steel Div., Buffalo  
 W7 Wilson Steel & Wire Co., Chicago  
 W8 Wisconsin Steel Co., S. Chicago, Ill.  
 W9 Woodward Iron Co., Woodward, Ala.  
 W10 Wycoff Steel Co., Pittsburgh  
 W11 Worcester Pressed Steel Co., Worcester, Mass.  
 Y1 Youngstown Sheet & Tube Co., Youngstown

**PIPE AND TUBING**

Base discounts (per) f.o.b. mills. Base price about \$280 per net ton.

	BUTTWELD												SEAMLESS											
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2 In.		3 In.		3 1/2 In.		4 In.		4 1/2 In.		5 In.	
	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.
<b>STANDARD T. &amp; C.</b>																								
Sparrows Pt. B3	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0										
Youngstown R3	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Fontana K1	10.75	+4.5	13.75	+0.5	16.25	3.0	18.75	3.75	19.25	4.75	19.75	5.25	21.25	5.0										
Pittsburgh J3	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75		
Alton, Ill. L1	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0										
Sharon M1	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Fairless N2	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0										
Pittsburgh N1	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75		
Wheeling W5	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Whelan W4	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75		
Youngstown Y1	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
Indiana Harbor Y1	22.75	7.5	25.75	11.5	28.25	15.0	30.75	15.75	31.25	16.75	31.75	17.25	33.25	17.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75		
Lorain N2	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0										
<b>EXTRA STRONG PLAIN ENDS</b>																								
Sparrows Pt. B3	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	19.0										
Youngstown R3	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Fairless N2	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	19.0										
Fontana K1	14.25		16.25		20.25		20.75		21.25		21.75		22.25											
Pittsburgh J3	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75		
Alton, Ill. L1	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	19.0										
Sharon M1	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Pittsburgh N1	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75		
Wheeling W5	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Whelan W4	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0										
Youngstown Y1	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75		
Indiana Harbor Y1	26.25	12.5	30.25	16.5	32.25	20.0	32.75	18.75	33.25	19.75	33.75	19.25	34.25	19.0										
Lorain N2	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75		

Threads only, butt weld and seamless 2 1/2 pt higher discount. Plain ends, butt weld and seamless, 3-in. and under, 4 1/2 pt higher discount. Butt weld jobbers discount, 5 pt.  
 Galvanized discounts based on zinc price range of over 9¢ to 11¢ incl. per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt. e.g., zinc price range of over 11¢ to 13¢ would lower discounts; zinc price in range of over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 12.00¢ per lb.

# Steel Prices

(Effective Apr. 26, 1955)

To identify producers, see Key on preceding page.

## RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer U1	4.45	5.35	5.425				
So. Chicago R3				7.30			
Ensley T2	4.45	5.35					
Fairfield T2		5.35			5.275		
Gary U1	4.45	5.35		7.30		5.275	
Ind. Harbor J3	4.45		5.425	7.30			
Johnstown B3		5.35				5.275	
Joliet U1		5.35	5.425				
Kansas City S2				7.30			11.50
Lackawanna B3	4.45	5.35	5.425			5.275	
Minnequa C6	4.45	5.85	5.425	7.30		5.275	11.50
Pittsburgh P1					11.00		11.50
Pittsburgh J1				7.30			11.50
Seattle B2				7.80		5.425	12.00
Steelton B1	4.45		5.425			5.275	
Struthers Y1				7.30			
Torrance C7					5.425		
Williamport S3		5.35					
Youngstown R1				7.30			

## ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths) <sup>a</sup>	Cold-Reduced (Coiled or Cut Length)	
		Semi- Processed	Fully Processed
Field	8.025	8.225	
Armature	8.50	8.75	9.25
Elect.	9.10	9.35	9.85
Motor	10.10	10.35	10.85
Dynamo	11.00	11.25	11.75
Trans. 72	11.95	12.20	12.70
Trans. 85	12.50	Grain Oriented	
Trans. 56	13.00	Trans. 80	16.60
Trans. 52	14.00	Trans. 73	17.10

Producing points: Beech Bottom (W3); Brackenridge (A1); Granite City (G2); Indiana Harbor (I3); Mansfield (E2); Newport, Ky. (N3); Niles, O. (N3); Vandergrift (U1); Warren, O. (R3); Zanesville (A7).

## CLAD STEEL

Stainless-carbon		Plate		Sheet	
No. 304, 20 pct.					
Coatesville, Pa., L4				33.60	
Washington, Pa., J2					
Claymont, Del., C4					29.75
New Castle, Ind., J2					
Nickel-carbon					
10 pct. Coatesville, Pa., L4			39.50		
Inconel-carbon					
10 pct. Coatesville, Pa., L4			47.70		
Monel-carbon					
10 pct. Coatesville, Pa., L4			40.80		

<sup>a</sup> Includes annealing and pickling, sandblasting.

## MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard 6-Cor'd Nails		Woven Wire		Fence Posts		Single Loop Bale Ties		Galv. Barbed and Twisted Barbless Wire		Merch. Wire An'd		Merch. Wire * Galv.	
	Cal	Col	Cal	Col	Cal	Col	Cal	Col	Cal	Col	Cal	Col	Cal	Col
Alabama City R1	137	146			155	159	6.90	7.30						
Altoona, Pa. J3	137	149				155	6.90	7.45						
Atlanta A8	139	151			157	164	7.00	7.525						
Barionville K2	139	151			157	164	7.00	7.55						
Buffalo W6							6.90	7.30						
Chicago, Ill. N4	137	149			155	162	6.90	7.45						
Cleveland A6	142													
Cleveland A5							6.90							
Crawfordsville M4	139	151			157	159	7.00	7.55						
Dona, Pa. A5	137	149			155	162	6.90	7.45						
Duluth A5	137	149	150		155	162	6.90	7.45						
Fairfield, Ala. T2	137	149			155	162	6.90	7.45						
Galveston D4	139													
Houston S2	142	154				164	7.15	7.70						
Johnstown, Pa. B3	137	149				162	6.90	7.45						
Joliet, Ill. A3	137	149			155	162	6.90	7.45						
Kokomo, Ind. C9	139	149			157	161	7.00	7.55						
Los Angeles B2							7.85							
Kansas City S2	142	158			167	164	7.15	7.90						
Minnequa C6	142	151	155	160	164	7.15	7.55							
Monacaan P6	137	151				163	6.90	7.45						
Moline, Ill. R3					155									
Pittsburg, Cal. C7	156	172			179	182	7.85	8.40						
Portsmouth P7							6.90	7.90						
Rankin, Pa. A5	137	149				162	6.90	7.45						
So. Chicago R3	137	146	150	155	159	6.90	7.30							
S. San Francisco C6						179								
Sparrows Pt. R3	139				157	164	7.00	7.55						
Struthers, O. Y1							6.90	7.55						
Worcester A5	143						7.20							
Williamport, Pa. S5			150											

Cut Nails, carloads, base \$8.30 per keg at Conshohocken, Pa. (A7). Galvanized products computed with zinc at 11.0¢ per lb. Exceptions: Alabama City and So. Chicago computed with zinc at 5¢.

## C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT				
	0.25-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Bridgeport, New Britain, Conn. N8	5.75	8.95	9.00	11.15	13.85
Buffalo, N. Y. R7	5.75	8.85	9.00	10.95	13.25
Carnegie, Pa. S9		8.85	9.00	11.15	13.85
Cleveland A5	5.75	8.85	9.00	11.15	13.85
Detroit D1	5.85	8.25	9.20	10.95	
Detroit D2	5.85	8.25	9.20		
Harrison, N. J. C11			9.30	11.45	14.15
Indianapolis C3	6.00	8.20	9.00	11.15	13.85
New Castle, Pa. B4	5.75	8.85	9.00	10.95	
New Haven, Conn. D1	6.20	8.35	9.30	11.25	
Pawtucket, R. I. N7	6.30	8.35	9.30	11.45	14.15
Riverside, Ill. A1	5.85	8.95	9.00	11.15	13.85
Sharon, Pa. S1	5.75	8.85	9.00	11.15	13.85
Trenton R4		8.35	9.30	11.25	13.40
Wallingford W1	6.20	8.35	9.30	11.45	14.15
Warren, Ohio T4	5.75	8.85	9.00	11.15	13.85
Weirton, W. Va. W3	5.85	8.85	9.00	10.95	13.25
Worcester, Mass. A5	6.40	8.35	9.30	11.45	14.15
Youngstown C5	5.85	8.85	9.00	11.15	13.85

## BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	28.33	33.97	27.48	32.95
	2 1/2	12	38.15	45.74	37.06	44.36
	3	12	44.05	52.82	42.72	51.23
	3 1/2	11	51.43	61.66	49.88	59.81
	4	10	68.29	81.88	66.24	79.42
National Tube	2	13	28.33	33.97	27.48	
	2 1/2	12	38.15	45.74	37.06	
	3	12	44.05	52.82	42.72	
	3 1/2	11	51.43	61.66	49.88	
	4	10	68.29	81.88	66.24	
Pittsburgh Steel	2	13	28.33	33.97		
	2 1/2	12	38.15	45.74		
	3	12	44.05	52.82		
	3 1/2	11	51.43	61.66		
	4	10	68.29	81.88		

## WARE-HOUSES

Base price, f.o.b., dollars per 100 lb.

HOUSES		Sheets			Strip		Plates	Shapes	Bars		Alloy Bars				
Cities	City Delivery Charge	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	As rolled A 4615	As rolled	Hot-Rolled A 4140	Cold-Drawn A 4615	Cold-Drawn A 4140
Baltimore	.20	6.02	7.51	7.64	6.60			6.37	6.72	6.68	8.02	12.94	12.54	15.34	15.19
Birmingham	.15	6.35	7.35	8.25	6.60	8.85	6.65	6.65	6.50	8.85					
Boston	.10	7.23	8.23	9.52	7.47	9.65	7.34	7.20	7.20	8.60	12.85	12.60	15.40	15.25	
Buffalo	.25	6.35	7.40	8.75	6.70	7.02	6.65	6.70	6.50	7.40	12.70	12.15	15.10	14.80	
Chicago	.20	6.38	7.38	8.30	6.62		6.52	6.69	6.51	7.25	12.25	12.05	14.60	14.75	
Cincinnati	.20	6.49	7.37	8.25	6.86		6.81	6.91	6.75	7.55	12.55	12.35	14.90	15.00	
Cleveland	.20	6.38	7.38	8.25	6.72		6.60	7.02	6.57	7.35	11.96	12.11		14.76	
Denver		8.15	9.80	10.72	8.40		8.10	8.15	8.30	9.92				17.12	
Detroit	.20	6.57	7.57	8.58	6.90		6.80	7.16	6.79	7.54	12.65	12.25	15.05	14.90	
Houston	.20	7.35	7.80	9.93	7.70		7.35	7.60	7.70	9.30		13.25			
Kansas City	.20	7.05	8.05	8.97	7.29		7.19	7.36	7.18	8.02		12.72			
Los Angeles	.10	7.50	9.35	9.95	7.85		7.45	7.65	7.45	10.15		13.45		16.60	
Memphis	.10	6.79	7.89		6.90		7.01	7.09	6.88	8.24					
Milwaukee	.20	6.47	7.47	8.21	6.71		6.61	6.66	6.60	7.44	12.34	12.14	14.69	14.79	
New Orleans	.15	6.70	7.65	8.39	6.80		6.90	7.05	6.80	8.60					
New York	.10	6.97	7.76	8.79	7.34	10.15	7.07	7.13	7.30	8.63	12.63	12.43		15.06	
Norfolk	.20	7.07	8.56	8.99	7.50		7.27	7.34	7.37	8.83					
Philadelphia	.10	6.19	8.09	8.36	7.06		6.50	6.64	6.64	7.66	12.61	12.36	15.06	14.91	
Pittsburgh	.20	6.38	7.38	8.30	6.72		6.52	6.69	6.51	7.35	12.25	12.05	14.60	14.70	
Portland	.20	7.00	7.75	8.50	7.25		6.85	7.00	7.05	10.20					
Salt Lake City	.20	7.45	10.20	10.70	9.05		7.70	7.70	8.00	11.70					
San Francisco	.20	7.55	8.95	9.35	7.00		7.40	7.50	7.35	10.05		13.35		16.50	
Seattle	.00	8.10	9.80	10.15	8.20		7.90	7.75	7.90	10.95		13.00		16.40	
St. Louis	.20	6.42	7.67	8.54	6.91	8.13	6.81	7.09	6.80	7.64	12.54	12.34	14.84	14.90	
St. Paul	.20	7.04	8.03	8.98	7.28		7.18	7.35	7.17	8.91		12.56		15.20	

# Miscellaneous Prices

(Effective Apr. 26, 1955)

## TOOL STEEL

F.o.b. mill					
W	Cr	V	Mo	Co	per lb
18	4	1	—	—	\$1.54
18	4	1	—	5	2.245
18	4	2	—	—	1.706
1.5	4	1.5	8	—	.90
6	4	2	6	—	1.29
High-carbon chromium .....					
Oil hardened manganese .....					
Special carbon .....					
Extra carbon .....					
Regular carbon .....					
Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.					

## CAST IRON WATER PIPE

Per Net Ton	
6 to 24-in., del'd Chicago	\$111.90 to \$115.30
6 to 24-in., del'd N. Y.	115.00 to 116.00
6 to 24-in., Birmingham	95.00 to 102.50
6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less .....	\$129.50 to \$131.50
Class "A" and gas pipe, 5¢ extra; 4-in. pipe is \$5 a ton above 6-in.	

## LAKE SUPERIOR ORES

61.50% Fe; natural content, delivered lower Lake ports. Prices effective for 1955 season.

Gross Ton	
Openhearth lump .....	\$11.25
Old range, bessemer .....	10.40
Old range, nonbessemer .....	10.25
Mesabi, bessemer .....	10.25
Mesabi, nonbessemer .....	10.10
High phosphorus .....	10.00

## COKE

Furnace, beehive (f.o.b. oven)		Net-Ton
Connellsville, Pa. ....		\$12.75 to \$13.25
Foundry, beehive (f.o.b. oven)		
Connellsville, Pa. ....		\$16.00 to \$17.50
Foundry, oven coke		
Buffalo, del'd .....		\$28.08
Chicago, f.o.b. ....		24.50
Detroit, f.o.b. ....		25.50
New England, del'd .....		26.05
Seaboard, N. J., f.o.b. ....		24.00
Philadelphia, f.o.b. ....		23.00
Swedeland, Pa., f.o.b. ....		23.00
Painesville, Ohio, f.o.b. ....		25.50
Erie, Pa., f.o.b. ....		25.00
Cleveland, del'd .....		27.42
Cincinnati, del'd .....		26.56
St. Paul, f.o.b. ....		23.75
St. Louis, f.o.b. ....		26.00
Birmingham, f.o.b. ....		22.65
Lone Star, Tex., f.o.b. ....		18.50

## ELECTRODES

Cents per lb, f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE			CARBON*		
Diam. (in.)	Length (in.)	Price	Diam. (in.)	Length (in.)	Price
24	84	22.00	48	110	10.80
28	72	21.25	40	100, 110	9.50
16 to 18	72	21.50	35	110	9.50
14	72	22.00	30	110	9.60
12	72	22.25	24	72 to 84	9.85
8 to 10	80	22.75	20	90	9.95
7	80	23.00	17	72	9.85
6	80	25.50	14	72	10.25
4	40	29.50	10, 12	80	10.10
3	40	30.00	8	80	11.40
2 1/2	30	30.75			
2	24	47.75			

\* Prices shown cover carbon nipples.

## BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

### Machine and Carriage Bolts

	Discount	
	Less Case	C.
1/4 in. & smaller x 4 in. & shorter .....	2	22
1/4 in. & smaller x 6 in. & shorter .....	+3	18
9/16 in. & 5/8 in. x 6 in. & shorter .....	+4	17
3/4 in. & larger x 6 in. & shorter .....	+6	15
All diam. longer than 6 in. & 1/2 in. & smaller x 6 in. & shorter .....	+15	8
Lag, all diam. x 6 in. & shorter .....	+3	18
Lag, all diam. longer than 6 in. .....	6	25
Plow bolts .....	+2	19
	23	22

### Nuts, H.P., C.P., reg. & hvy.

	Discount, Case or Keg	
	Base Discount	C.
1/2" or smaller .....	55	64
3/4" to 1 1/4" inclusive .....	58	68
1 1/2" to 1 3/4" inclusive .....	60	67 1/2

### C.P. Hex. regular & hvy.

All sizes .....	55	64
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### Hot Galv. Nuts (all types)

1/2" or smaller .....	38	50
3/4" to 1 1/2" inclusive .....	41	52 1/2

### Finished, Semi-finished, Slotted or Castellated Nuts

All sizes .....	55	66
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### Rivets

Base per 100 lb	
1/2 in. & larger .....	\$9.25
7/16 in. and smaller .....	Pot Off List 37

### Cap Screws

	Discount	
	Bright	H.C. Heat Treated
New std. hex head, packaged .....		
1/2" x 6" and smaller and shorter .....	38	28
5/8", 3/4", 1" x 6" and shorter .....	15	1
New std. hex head, bulk* .....		
6" x 6" and smaller and shorter .....	50	42
3/4", 1", 1 1/4" x 6" and shorter .....	32	21
*Minimum quantity per item:		
15,000 pieces 1/4", 5/16", 3/8" diam.		
5,000 pieces 7/16", 1/2", 9/16", 5/8" diam.		
2,000 pieces 3/4", 1", 1 1/4" diam.		

### Machine Screws & Stove Bolts

	Discount	
	Mach. Screws	Stove Bolts
Packaged, package list .....	33	43
Bulk, bulk list .....		
1/4-in. diam. { 15,000-99,999 .....	17	59
{ 100,000-199,999 .....	25	63
{ 200,000 & over .....	32	67
5/16-in. diam. & under .....	17	59
3/8-in. diam. & under .....	25	63
1/2-in. diam. & under .....	32	67
All diam. { 5,000-49,999 .....	59	
{ 50,000-99,999 .....	63	
over 3 in. { 100,000 & over .....	67	

### Machine Screw & Stove Bolt Nuts

	Discount	
	Hex	Square
Packaged, package list .....	39	33
Bulk, bulk list .....		
1/4-in. diam. & smaller { 15,000-99,999 .....	15	17
{ 100,000-199,999 .....	23	25
{ 200,000 & over .....	31	32

## REFRACTORIES

### Fire Clay Brick

Carloads per 1000	
First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5.00) .....	\$114.00
No. 1 Ohio .....	107.00
Sec. quality, Pa., Md., Ky., Mo., Ill. .....	107.00
No. 2 Ohio .....	95.00
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50) .....	17.00

### Silica Brick

Mt. Union, Pa., Ensley, Ala. ....	\$120.00
Childs, Hays, Pa. ....	125.00
Chicago District .....	120.00
Western Utah .....	
California .....	
Super Duty .....	
Hays, Pa., Athens, Tex., Windham .....	137.00
Curtner, Calif. ....	155.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) .....	20.00
Silica cement, net ton, bulk, Hays, Pa. ....	22.00
Silica cement, net ton, bulk, Chicago District, Ensley, Ala. ....	21.00
Silica cement, net ton, bulk, Utah and Calif. ....	

### Chrome Brick

Per net ton	
Standard chemically bonded, Balt. ....	\$56.00
Standards chemically bonded, Curtner, Calif. ....	94.38
Burned, Balt. ....	80.00

### Magnesite Brick

Standard Baltimore .....	\$109.00
Chemically bonded, Baltimore .....	97.50

### Grain Magnesite

St. % in. grains	
Domestic, f.o.b. Baltimore .....	
In bulk fines removed .....	\$64.40
Domestic, f.o.b. Chewah, Wash., Luning, Nev. ....	
In bulk .....	38.00
In sacks .....	43.75

### Dead Burned Dolomite

Per net ton	
F.o.b. bulk, producing points in: .....	
Pa., W. Va., Ohio .....	\$14.50
Midwest .....	15.10
Missouri Valley .....	13.65

## FLUORSPAR

Washed gravel, f.o.b. Rosclair, Ill. Price, net ton, effective CaF <sub>2</sub> content .....	\$44.00
72% or more .....	42.50
60% or less .....	35.00

## METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.	
Swedish sponge iron c.l.f. ....	
New York, ocean bags .....	11.35¢
Canadian sponge iron, Del'd in East .....	13.9¢
F.o.b. ship. pt., carloads .....	9.5¢
Domestic sponge iron, 98+% Fe, carload lots .....	9.5¢
Electrolytic iron, annealed, 98.5+% Fe .....	39.9¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe .....	53.5¢
Hydrogen reduced iron minus 300 mesh, 98+% Fe, 63.0¢ to 80.0¢ .....	
Carbonyl iron, size 5 to 10 micron, 98%, 00.8+% Fe .....	83.0¢ to \$1.43
Aluminum .....	31.5¢
Brass, 10 ton lots .....	29.50¢ to 34.50¢
Copper, electrolytic .....	51.50¢
Copper, reduced .....	51.50¢
Cadmium, 100-199 lb. 99¢ plus metal value .....	
Chromium, electrolytic, 99% min., and quality, del'd .....	83.60
Lead .....	23.50¢
Manganese .....	57.0¢
Molybdenum, 99% .....	22.75
Nickel, unannealed .....	39.50¢
Nickel, annealed .....	35.50¢
Nickel, spherical, unannealed .....	42.50¢
Solder powder, 7.0¢ to 9.0¢ plus met. value .....	
Stainless steel, 302 .....	91.0¢
Stainless steel, 316 .....	11.10
Tin .....	14.04¢ plus metal value
Tungsten, 99% (65 mesh) .....	84.05
Zinc, 10 ton lots .....	17.5¢ to 25.0¢

# Ferroalloy Prices

(Effective Apr. 25, 1955)

## Ferrochrome

Contract prices, cents per lb contained Cr, lump, bulk, carloads, del'd, 65-72% Cr, 2% max. Si			
0.025% C	36.00	0.15% C	32.75
0.025% C	36.00	0.20% C	33.50
Simplex	34.50	0.50% C	33.25
0.06% C	34.50	1.00% C	33.00
0.10% C	34.00	2.00% C	32.75
65-69% Cr, 4-9% C	24.75		
62-64% Cr, 4-6% C, 6.9% Si	25.60		

## S. M. Ferrochrome

Contract prices, cents per pound, chromium contained, lump size, delivered.	
High carbon type: 60.55% Cr, 4-6% Si, 4-5% Mn, 4-6% C.	
Carloads	25.85
Ton lots	28.00
Less ton lots	29.50

## High Nitrogen Ferrochrome

Low-carbon type 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

## Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.	
0.10% max. C	\$1.18
0.50% max. C	1.14
9 to 11% C	1.25

## Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed, lump 4-in. x down, \$4.75¢ per lb contained Cr plus 12.00¢ per lb contained Si. Bulk 3-in. x down, 25.05¢ per lb contained Cr plus 10.80¢ per lb contained Si. Bulk 1-in. x down, 25.25¢ per lb contained Cr plus 11.00¢ per lb contained Si.

## Calcium-Silicon

Contract price per lb of alloy, lump, delivered.	
30-32% Cr, 60-65% Si, 3.00 max. Fe.	
Carloads	19.00
Ton lots	22.10
Less ton lots	23.60

## Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy, lump, delivered.	
16-20% Ca, 14-18% Mn, 53-59% Si.	
Carloads	20.00
Ton lots	22.30
Less ton lots	23.30

## SMZ

Contract prices, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 50% Fe 1/2 in. x 12 mesh.	
Ton lots	17.50
Less ton lots	19.50

## V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 5-11% Mn, packed.	
Carload lots	16.60
Ton lots	18.10
Less ton lots	19.35

## Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.	
Carload packed	17.50
Ton lots to carload packed	18.50
Less ton lots	20.60

## Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 78 pct Mn.	
Cents per-lb	
Producing Point	
Marietta, Ashabula, O.; alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	9.50
Clairton, Pa.	9.50
Sheridan, Pa.	9.50
Philo, Ohio	9.50
Add or subtract 0.1¢ for each 1 pct Mn above or below base content.	
Briquets, delivered, 86 pct Mn:	
Carloads, bulk	11.85
Ton lots packed	13.65

## Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.		
Manganese	Silicon	
16 to 19%	3% max.	\$84.00
19 to 21%	3% max.	86.00
21 to 23%	3% max.	88.50
23 to 25%	3% max.	91.00

## Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.	
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.	
Carload, packed	45.00
Ton lots	43.50

## Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.	
Carloads	30.00
Ton lots	32.00
250 to 1999 lb	34.00
Premium for hydrogen removed metal	0.75

## Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn 21.35¢

## Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.			
Carloads Ton Less			
0.07% max. C, 0.06% P, 90% Mn	32.50	33.85	25.95
0.07% max. C	29.95	31.80	23.80
0.15% max. C	28.45	30.30	21.50
0.30% max. C	26.95	28.80	20.00
0.50% max. C	26.45	28.30	19.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si	23.45	25.30	26.50

## Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mo, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.	
Carload bulk	11.00
Ton lots	12.65
Briquet contract basis carlots, bulk, delivered, per lb of briquet	12.45
Ton lots, packed	14.35

## Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$85.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$88.00. Add \$1.00 per ton for each additional 0.50% Si up to and including 17%. Add \$1.45 for each 0.50% Mn over 1%.

## Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.	
Ton lots Carloads	
96% Si, 2% Fe	20.10 18.00
97% Si, 1% Fe	20.60 18.50

## Silicon Briquets

Contract price, cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si briquets.	
Carloads, bulk	6.55
Ton lots	8.35

## Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.	
25% Si	20.00 75% Si 14.40
50% Si	12.00 85% Si 16.10
65% Si	13.50 90% Si 17.25

## Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.	
Ton lots Cast Turnings Distilled	
Less ton lots	\$2.05 \$3.95 \$3.75
	2.40 3.30 4.55

## Ferrovandium

35-55% contract, basis, delivered, per pound, contained V.	
Openhearth	\$3.00-\$3.10
Crucible	3.10-3.20
High speed steel (Primos)	3.20-3.25

Alisfer, 20% Al, 40% Si, 40% Fe. Contract basis, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads	9.25¢
Ton lots	10.15

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo \$1.28

Ferrocolumbium, 50-60%, 2 in. x D contract basis, delivered per pound contained Cb.	
Ton lots	\$12.00
Less ton lots	12.05

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, contract basis, del'd, ton lots, 2-in. x D per lb cont'd Cb plus Ta... \$6.25

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo... \$1.46

Ferrophosphorus, electric, 23-25% car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$4.00 unitage, per gross ton \$90.00 10 tons to less carload \$110.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti \$1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti \$1.50 Less ton lots \$1.55

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton \$177.00

Ferrotungsten, 1/2 x down, packed, per pound contained W, ton lots, f.o.b. \$3.80

Molybde oxide, briquets, per lb contained Mo, f.o.b. Langeloth, Pa. \$1.27

bags, f.o.b. Washington, Pa., Langeloth, Pa. \$1.24

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per lb. Carload, bulk, lump \$15.50¢ Ton lots, packed lump \$16.75¢ Less ton lots, lump, packed \$17.25¢

Vanadium Pentoxide, 86 - 89% V<sub>2</sub>O<sub>5</sub> contract basis, per pound contained V<sub>2</sub>O<sub>5</sub> \$128

Zirconium, contract basis, per lb of alloy.

35-40%, f.o.b. freight allowed, ton lots \$26.00¢ 12-15%, del'd, lump, bulk-carloads \$8.00¢

## Boron Agents

Borasil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed. B, 3.14%, Si, 46-45%, per lb contained 2... \$5.25

Bortam, f.o.b. Niagara Falls Ton lots, per pound 45¢ Less ton lots, per pound 50¢

Corbortam, Ti 16-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. Ton lots per pound 10.00¢

Ferroboration, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, Ton lots... \$1.20 F.o.b. Wash., Pa.; 100 lb up 10 to 14% B .85 14 to 19% B 1.20 19% min. B 1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over No. 1 \$1.00 No. 4 \$1.04 No. 79 50¢

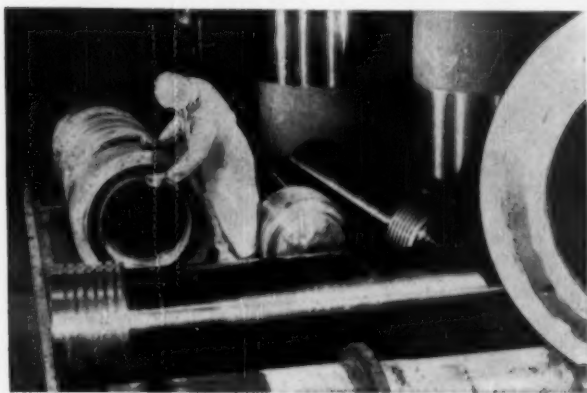
Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd. Ton lots \$1.46 Less ton lots 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd, less ton lots \$2.05

Silenz, contract basis, delivered. Ton lots 45.00¢



The production capacity of this 5,000 ton forming press, installed in an aircraft plant, is so great it requires 25 persons to load and unload the four tables. To provide dense, sound and uniform structure in hydraulic press rams, Lake Erie specifies the component in nickel cast iron.



Lake Erie's Engineers specify rams of

## NICKEL CAST IRON

# for strength... toughness... tightness

YOU'LL FIND MAXIMUM PRESSURE TIGHTNESS, together with extra toughness and strength, in rams for Lake Erie's powerful hydraulic presses.

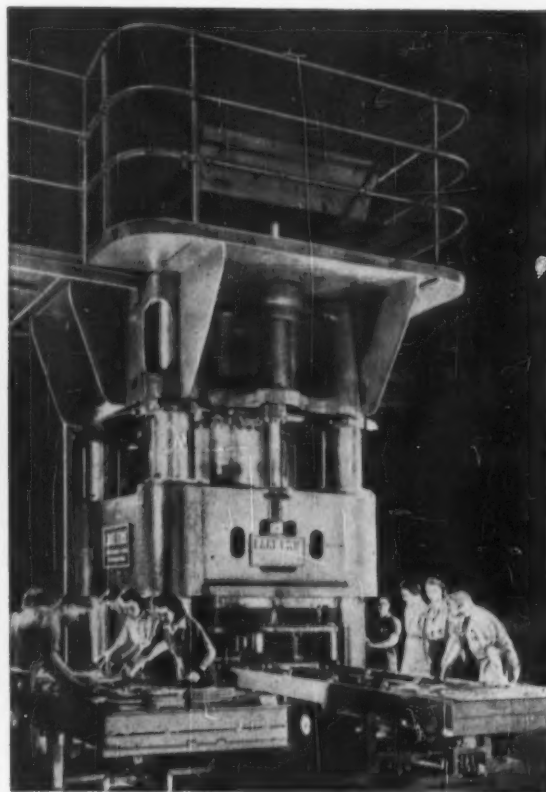
Cast iron containing up to 1½ percent nickel provides this combination of properties in all Lake Erie rams.

*Suitable additions of nickel to properly adjusted base mixtures provide castings with uniform, fine-grained structures.*

In addition, nickel in gray iron minimizes chill and consequently the formation of free iron carbides. This results in strong yet readily machinable castings, without sacrifice of hardness or wear-resistance.

Lake Erie presses also utilize alloys containing nickel for dies as well as many other components.

For instance, on extrusion presses, the containers and container liners are nickel alloy steel forgings. And on many column and side housing types of



hydraulic presses you'll find the repeated load of press operation absorbed by platen inserts or wear plates of nickel-chromium steel.

In many applications, alloys containing nickel give optimum performance and prove lowest in ultimate cost. So, whenever you have a metal problem, send us the details. We'll be glad to help you with suggestions based on wide practical experience.

The International Nickel Company, Inc.  
67 Wall St., New York 5, N. Y.



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April 28, 1955



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\*TORQUEMOTIVE DRIVE: Plymouth Transmission coupled to a Hydraulic Torque-Converter

ALSO BUILDERS OF F-R-H CERAMIC MACHINERY

## How the Steel Industry Is Fighting Air Pollution



When the public hears about dust and fume control it is often in terms of what has not been done. It is important that they should also know what has been done, because the record of the steel industry is one of the most progressive.

**The purpose of this discussion is to give the executives the facts to prove this point.**

**Q.** First of all, how can you measure the progress of dust and fume control in the iron and steel industry?

**A.** As you know, there are many ways to combat air pollution. Equipment and methods vary in effectiveness, but the industry agrees that electrical precipitators have the highest collection efficiencies. By keeping track of the demand for this high efficiency equipment over the years, we can get a good indication of the importance the industry places on dust and fume control and the progress they are making.

**Q.** Do these figures show an increasing interest in this high efficiency equipment?

**A.** Suppose we let the figures speak for themselves. Since 1945 precipitator capacity in the steel industry had a greater increase than in any previous ten year period. Precipitators handling about 6½ million cfm were installed during this period.

**Q.** But can't you attribute this growth to the increase in steel-making capacity?

**A.** Some of this growth is due to expanded production facilities, but that's just a part of it. For instance, iron and steel production has increased about 30% since 1945 — but precipitator capacity has increased about 130% during this same period.

**Q.** In the old days, I guess precipitators were used primarily in blast furnaces, weren't they?

**A.** That's right. The first one went into operation in 1930. Since then, 169 Research Cottrells have been ordered by the industry.

**Q.** What about new applications?

**A.** We have a number of new uses that have proven themselves on the job. Open hearths, for instance. In one installation, our precipitators reduced stack discharge to a little over 2 pounds per hour. That's quite a reduction when you consider that the discharge without a precipitator ranged from 75 to 245 pounds per hour.

**Q.** I understand your Cottrells are used on some sintering machines now. Is this true?

**A.** Yes, we have three in operation and more under construction.

**Q.** How about scarfing machines?

**A.** This is a recent application which has worked out very satisfactorily. Two precipitators are now in operation on this application.

**Q.** Has anything been done on such problems as iron cupolas, electric furnaces, and ferromanganese blast furnaces?

**A.** Yes. Installations have been made on all these problems.

**Q.** How do you go about developing these new applications?

**A.** We work very closely with our customers on these new projects. Our laboratory is a big help, and our 40 years of pilot plant experience plus over 2,000 precipitators give us the kind of experience that leads to the successful engineering of projects like these.

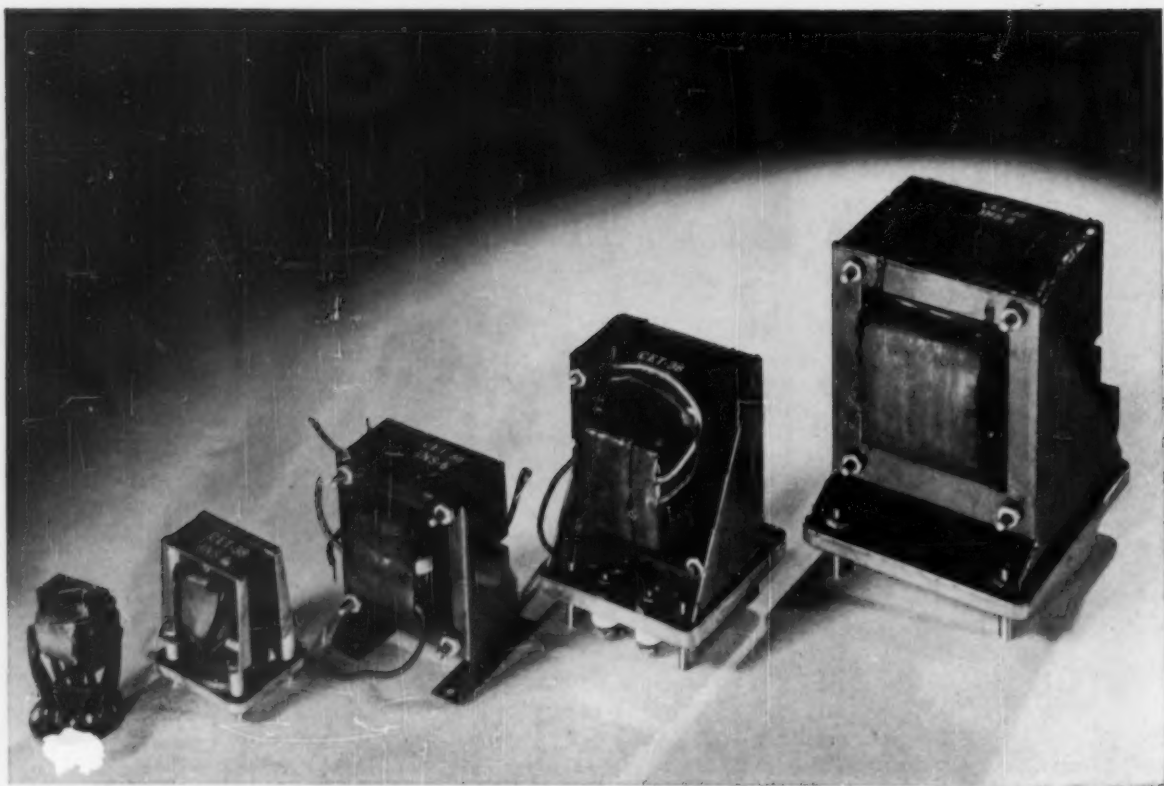
If you would like to have more information about these applications, or if you want to investigate the possibility of using precipitators on other equipment, our nearest representative will be glad to call on you.

### RESEARCH-COTTRELL, INC.

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The operation of a transformer is no better than the magnetic core around which it is built. With Allegheny magnetic materials in the core, you get the *best* — uniformly and consistently.

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oriented silicon steel), and a wide selection of special high-permeability alloys such as Allegheny 4750, Mumetal, etc.

In addition, our service on magnetic materials includes complete lamination fabrication and heat treatment facilities. What's more, this extensive experience in our own lamination stamping department is a bonus value for all users of A-L electrical sheets or strip. ● Let us supply *your* needs. **Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.**

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 in industry

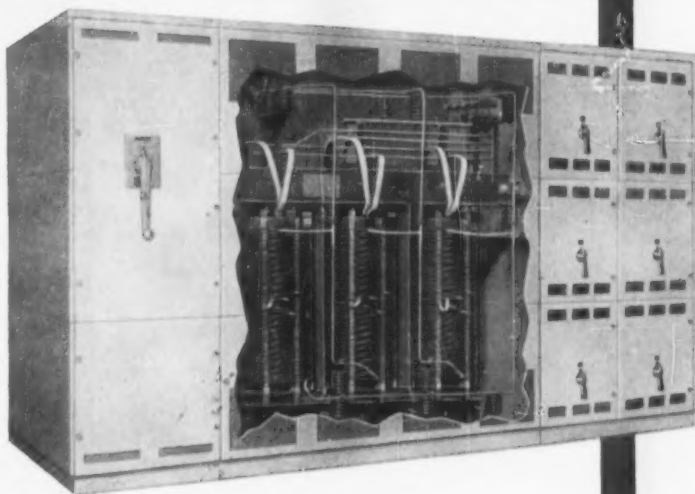
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Wagner "Predesigned" standard unit substation transformers are carefully engineered to meet heavy industrial demands—they are not designed for minimum duty only. Predesigning completely eliminates individual job engineering time . . . reduces your costs . . . and permits quick delivery.

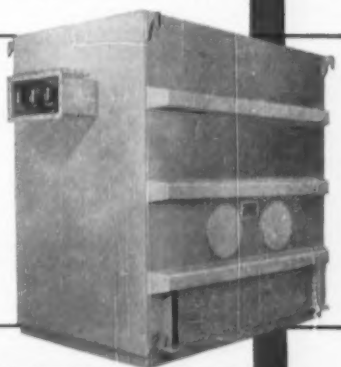
When you specify Wagner "Predesigned" transformers you get the advantages of a proved design in a completely assembled transformer, tested at the Wagner factory. They are built in standard ratings which are coordinated with the specifications of all unit substation builders. Wagner builds a complete line of substation transformers—open, ventilated Dry-type, Oil-Filled, Noflamol, and sealed-dry-type Nitrogen Filled—in ratings from 112½ through 2000 kva, 15 kv and below, to handle practically any distribution requirements.

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Wagner's nitrogen-filled transformers offer many advantages in maintenance and safety. They are relatively unaffected by water—they require only a minimum of maintenance—they present no cleaning problems, even in dust-filled areas. They have exceptionally high overload capacity, and are completely fire and explosion proof. Available in ratings up to 2000 kva.



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# How miller welders helped seal the arteries of America's largest single purpose power plant...



Substantial monument to Free Enterprise is OVEC and IKEC, suppliers of electric power to the Atomic Energy Commission's new uranium diffusion center in Pike County, Ohio.

Ohio Valley Electric Corporation and its subsidiary, Indiana-Kentucky Electric Corporation, agreed to supply electric power to this great new atomic production center... 15 billion kilowatt-hours annually.

Two huge generating stations are being built: The Kyger Creek Plant at Cheshire, Ohio will have five generating units of 200,000 KW each; Madison, Indiana's Clifty Creek plant will produce 1,200,000 KW with its six big generators. Each of the eleven turbo-generating units will operate off a single boiler, with super-heated steam reaching 1,050 degrees Fahrenheit under 2,000 lbs. pressure per square inch! The high temperatures and reheat, which the sponsor companies have pioneered in their own right, will make these two plants among the most economical, most efficient generating stations in the country.

These same elements, however, make the fabrication of faultless high-pressure steam lines vital... and extremely difficult. To accomplish this extremely important task, pipe welding specialists equipped with the maximum of engineering skill utilized the Miller Selenium Rectifier d-c Arc Welder.

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## THE CLEARING HOUSE

### News of Used and Rebuilt Machinery

**Pittsburgh Hums . . .** Used and rebuilt machinery sales attained a healthy, if not exceptional, level during March and seem to be stabilizing along these lines according to early April reports.

Practically all dealers in the area reported April business was as good or better than business during the first quarter of the year. Inquiries were generally continuing at a high level and the percentage of sales to inquiries showed an increase.

Rolling mills and steel mill equipment as well as heavy machine tools were experiencing the best increases as inquiries for these lines continued the strong pickup noted in March.

**Orders Follow Queries . . .** However, the balance of orders to inquiries is currently much more favorable than during the first quarter. This trend was further reflected by electrical rebuilders who reported the proportion of

larger equipment being sold today was greater than earlier in the year. This points, more-or-less, to the district's expansion.

March actually was one of the best months for electrical machinery rebuilders. It was considerably above January and although they expect April to be a little slower, reports indicate this will still be a very good month.

**Crane Sales Hold . . .** Crane inquiries are below the first quarter rate, but the sales ratio has increased and as a result, sales are continuing at a good steady rate. Smaller cranes and hoists are still the leaders as the expected increased demand for the heavier cranes did not develop.

An occasional large crane is being sold, but dealers' turnover is being normal. One crane company reported an excellent 75-ton ladle crane has not been given so much as an inquiry for several weeks.



PINION STAND of used 36 in. blooming mill leaves from Los Angeles harbor for Sweden. Shipped by Frank B. Foster, Inc., Pittsburgh, stand is one of three lifts over 75 tons and tops all past Los Angeles loadings.



## 16

## THE CLEARING HOUSE

# ROLLING MILLS—STEEL WORKS EQUIPMENT

- 1—34" x 22" x 112" 3-HIGH PLATE MILL with front and back tilting tables, 1500 HP motor and gear set; also 84" 3-high jump mill on same drive, with tables.
- 1—34" x 22" x 100" 3-HIGH PLATE MILL with 3000 HP motor drive, vertical edger, two tilting tables.
- 3—4-HIGH HOT STRIP MILL STANDS for up to 76" width.
- 3—4-HIGH HOT STRIP MILL STANDS for up to 48" width.
- 1—24" BAR MILL, 3-HIGH, 3 stands, with variable speed D.C. motor, travelling tilting tables, roller tables, saws, bloom shear, furnaces.
- 1—18" BAR MILL, 3-HIGH, single stand, with drive motor, tables, billet heating furnace, etc.
- 2—18" BAR MILL ROLL STANDS, 3-HIGH, liner type housings with removable top.
- 1—10" ROD MILL, 2-HIGH, 14 passes.
- 1—4-HIGH TANDEM COLD MILL, 4 stands, for strip up to 38".
- 1—4-HIGH SINGLE STAND COLD MILL for strip up to 14" wide, 200 HP motor, 400/800 RPM.
- 1—12" x 16" COLD MILL, 2-high.
- 1—10" x 16" TANDEM COLD MILL, 2-high, 3 stands.

- 1—34" x 192" ROLL GRINDER with motors and controls.
- 1—44" ROLL LATHE, enclosed headstock, tailstock, piano rest, 20 HP 550/1500 RPM, 230 volts D.C. motor and control.
- 2—PACK FURNACES for hot sheet mills, 42" x 40", double chamber.
- 1—STAMCO 24 CORRUGATING MACHINE for sheets, removable dies.
- 1—FLYING SHEAR with capacity up to 4" square, 9' to 30' lengths, at 400' per minute; with controls and 40' roller table.
- 1—FLYING SHEAR, Rendleman type, for bars.
- 1—PLATE SHEAR, capacity 9/16" x 156".
- DRAWBENCHES, 190,000 lb., 50,000 lb., 30,000 lb. capacities.
- 1—COKE OVEN PUSHER, used very little, excellent condition.
- 1—BILLETER, Bonnot-Lentz Size "C", maximum size 13" square x 18" long.
- 1—125-TON LADLE CRANE, 25-ton auxiliary, 50' span.
- 1—2000 HP MOTOR, 400 RPM, 4400/3/60.
- 1—1500 HP MOTOR, 595 RPM, 2200/3/60.
- 1—1800 HP GEAR DRIVE, ratio 19 to 1.
- 1—500 HP GEAR DRIVE, ratio 7.63 to 1.

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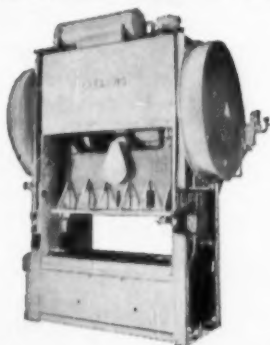
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1	1000	G.E.	MT-458	2200	321
1	500	G.E.	M-674T	6900	900
1	500	Whas.	CW	550	350
1	450	G.E.	IM	440	720
1	400	Whas.	CW-940A	440	1170
1	400	Whas.	CW	440	514
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1	350	G.E.	MT-443Y	2300/4000	255
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1	250	G.E.	MT-5598	2200	1800
1	250	Al. Ch.	IM	550	600
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1	200	G.E.	IM	440	435
1	200	G.E.	MTF	440	1170
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2	125	A.C.		440	865
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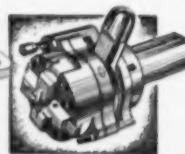
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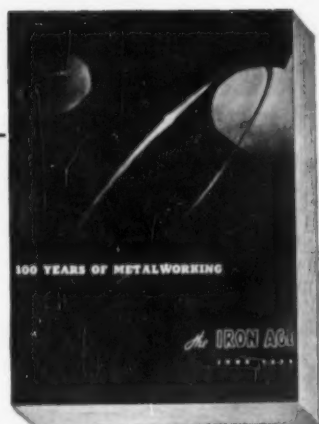
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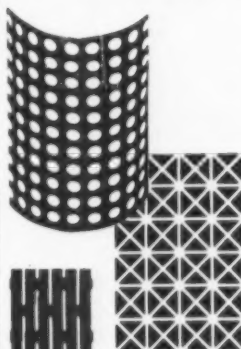
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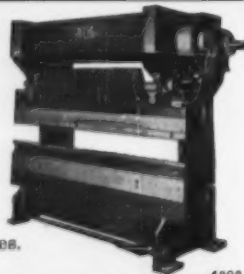
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# Trabon

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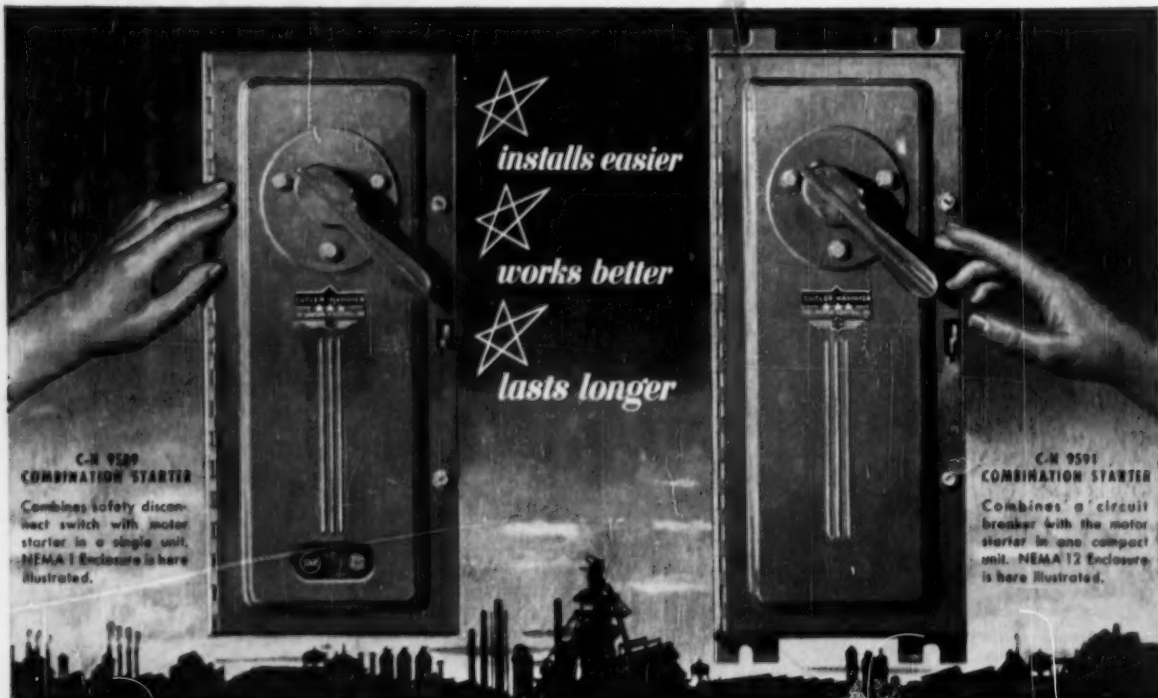
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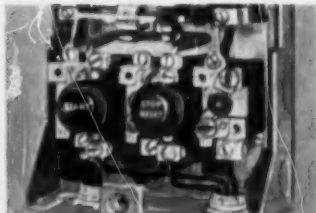
Star #2: Performance so uniform and dependable that *this* control often saves many times its cost by the production interruptions it avoids.

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requires maintenance expense in 90% of its uses.

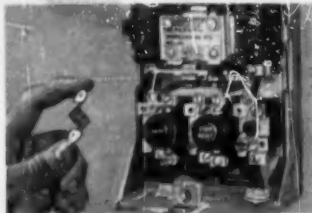
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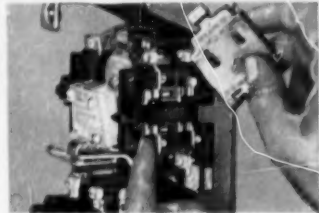
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